

February 3, 1958

PURCHASING

The Methods and News Magazine for Industrial Buyers



Technology for P.A.'s

A New Series Starting on Page 72

Make Forms Functional . . . Page 69

Are Buyers Obsolete? . . . Page 78

Defining What to Buy . . . Page 82

Table of Contents Page 5

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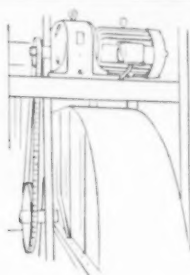
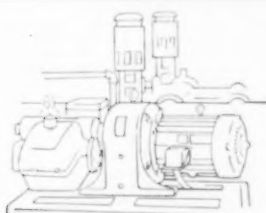
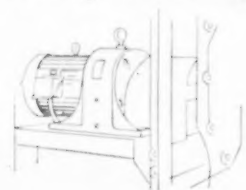
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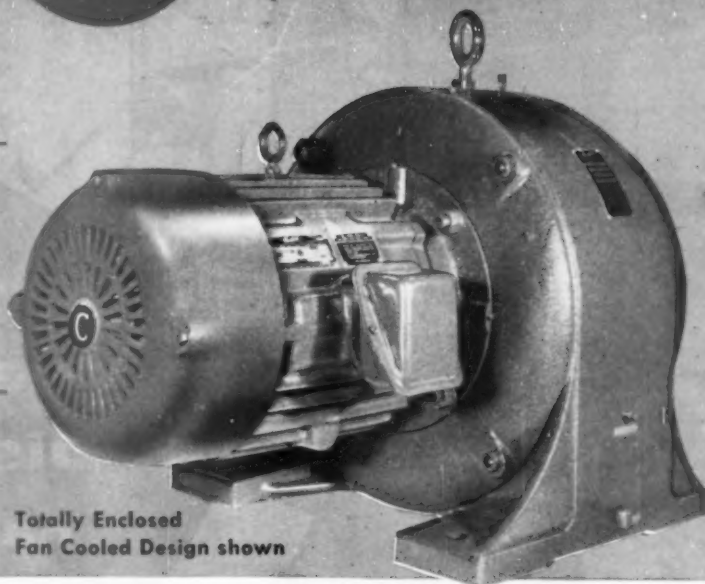
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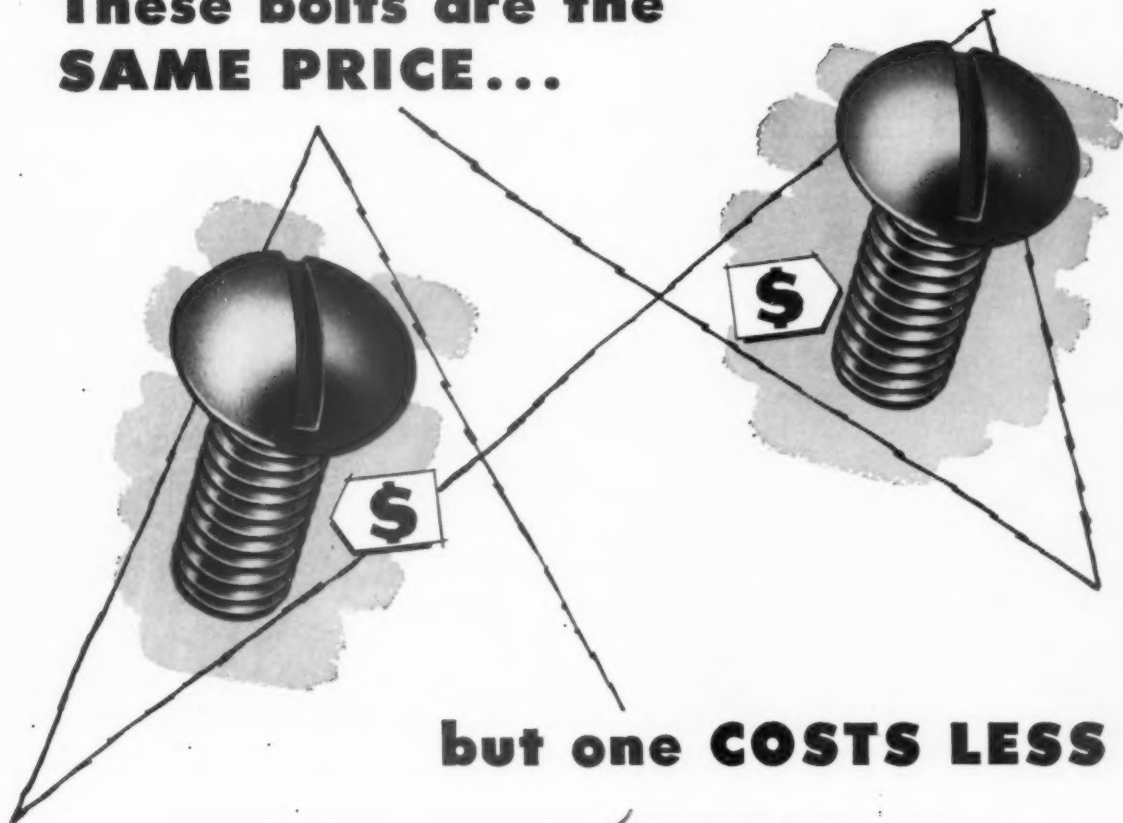


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PURCHASING

The Methods and News Magazine For Industrial Buyers

FEBRUARY 3, 1958

Volume 44, No. 3

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President

RAY RICHARDS

Publisher

The Pulse of Business	
Commodity and Business Trends	7
Value Analysis as a Selling Tool	67
Make Your Forms Functional	C. D. Francisco 69
How to Buy Fabricated Parts and Materials	T. C. DuMond 72
Buying Quality	John Van de Water 76
Are Buyers Becoming Obsolete?	Dean S. Ammer 78
Defining What to Buy	Stuart F. Heinritz 82
Why Not Make Orders Horizontal?	85
Take the Hunch Out of Buying	Ned Kellogg 86
The Professor, The P.A. and the Purchasing Profession	88
Contract Stipulations Sometimes Limit Seller's Liability	A. W. Gray 90
New Concept in Metal Joining	96
Increase Savings in Floorspace	110

MONTHLY FEATURES

Highlights of This Issue	65
Washington Report	25
Information for Your Catalog Files	45
Suppliers in the News	53
F.O.B.	62
Products and Ideas	96
Office Equipment and Supplies	110
Association News	116
Industry Developments	134
Classified Departments	140
Letters to the Editor	144
Index to Advertisers	146

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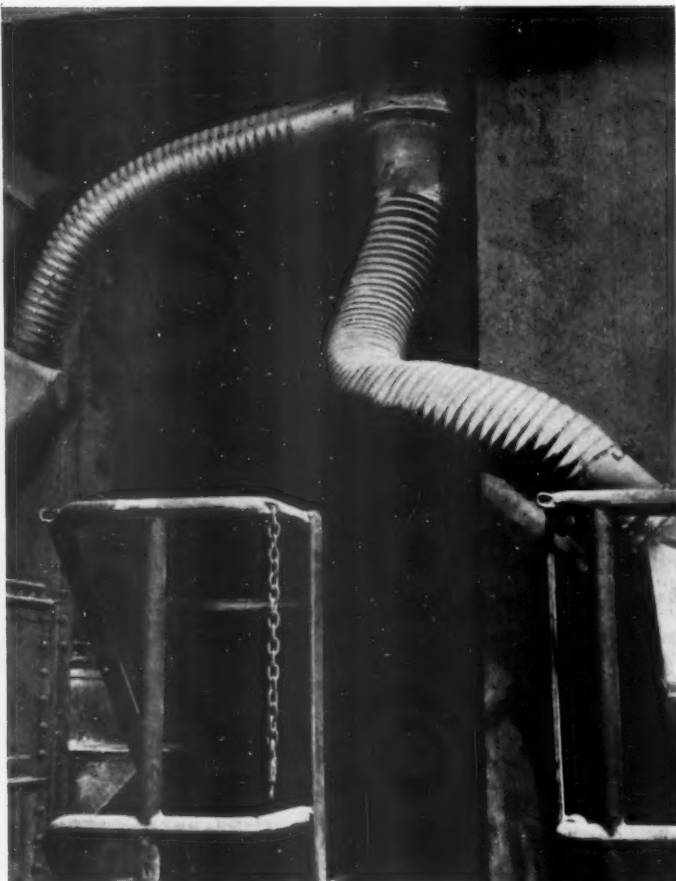
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FEBRUARY 3, 1958



Hose at one-third the cost outlasts pipe—4 to 1

Carrying off large quantities of abrasive dust had always been an expensive problem at this North-western plant. For it quickly ate through heavy-gauge pipe—especially where the ducts had to make sharp turns. In fact, 8 to 10 months was the limit for any pipe they tried.

But the G.T.M.—Goodyear Technical Man—figured he could top that with HD Industrial Vacuum Hose. It not only cost much less than the special pipe, but could be installed far more quickly and easily. And when worn, it could be rotated to distribute

wear. But here's the real pay-off: at last report, the G.T.M.'s hose was still going strong after 3 years' service.

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Pulse of Business

Is the President Too Optimistic?

FEW WOULD blow the whistle on President Eisenhower's confidence in the long-term vigor of our economy. However, his cheery view of the immediate business outlook is an entirely different matter.

The optimism that showed up in his reports to Congress last month had an even rosier hue when contrasted with the gray economic statistics released during the same month. It was apparent from the government figures that the business slump is deepening:

The Federal Reserve Board's Industrial Production Index plummeted to 136—it hasn't been lower since March '55.

Personal income dropped for the fourth consecutive month, off \$2.6 billion (on an annual basis) from the previous month.

Unemployment at 3.4 million (it's higher now) meant that 5.2 per cent of the labor force was out of work. And for those who were working, it was a short week—39.3 hours compared with 41 hours a year ago.

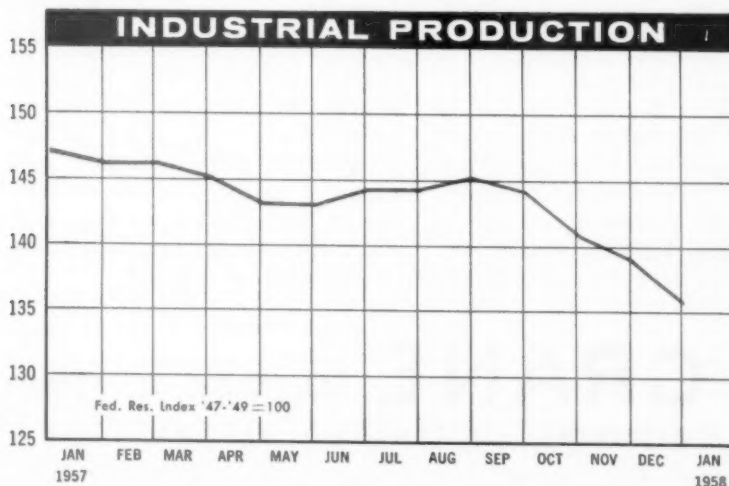
Fairly Drastic Adjustment Needed

These figures are definitely unsettling but they are not a cause for panic. They do, however, indicate that some fairly severe economic adjustments will have to be made before boom pressures build up again.

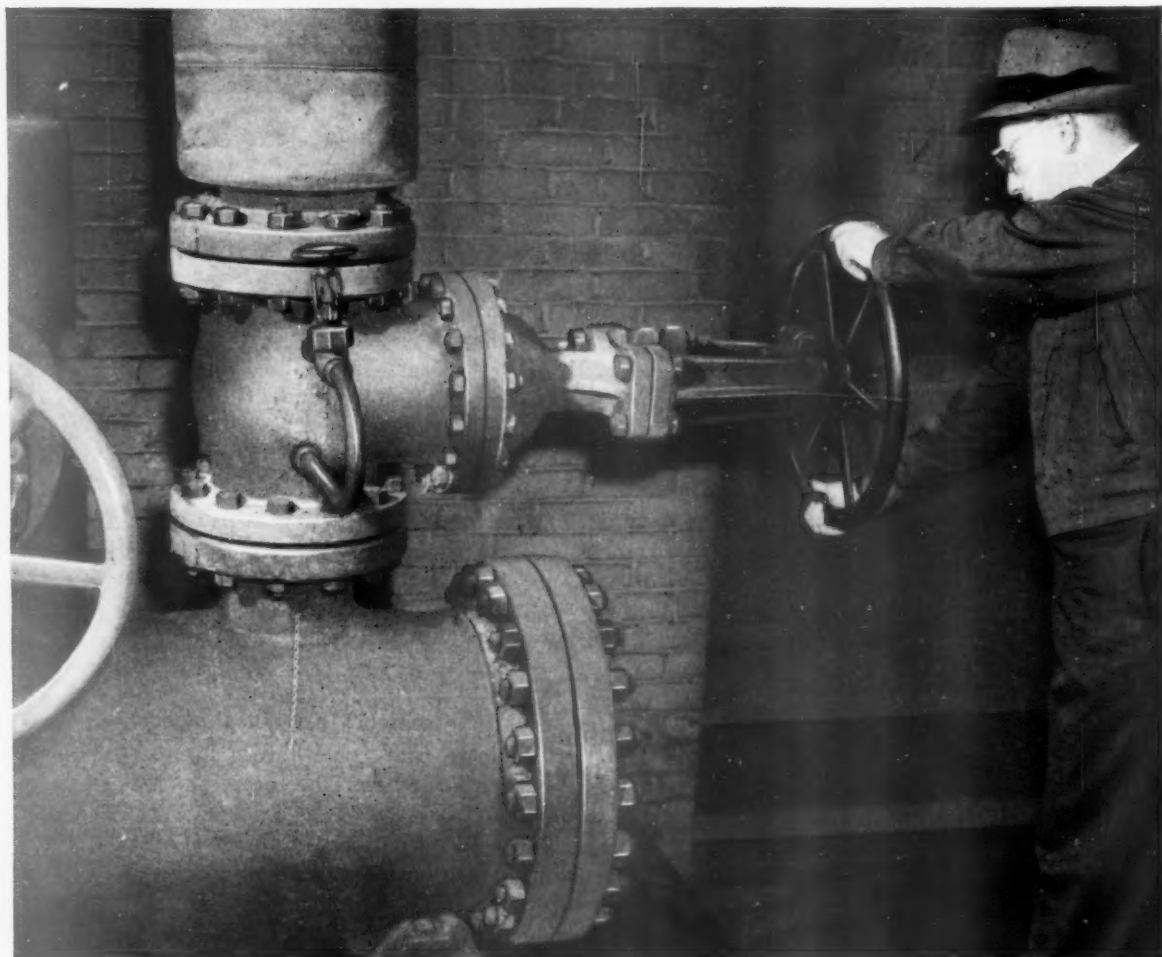
That's why Mr. Eisenhower's forecast of not only a quick end of the recession but of a definite pickup in business came as an eyebrow lifter. The basis for his short term optimism is hard to figure. It may be that as President he felt it was his duty to give the nation a half-time pep talk in an effort to prevent the recession from deepening.

Whatever the reason, his reports to Congress, if taken at face value, would require an overnight shift in the current economic trend. That the President is counting on a sudden business revival

Federal Reserve Board's Industrial Production Index sank to 136 in December, seven per cent below the same month a year ago. Steel was one of the slump leaders.



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This valve has a 28-year service record

Here is another prime example of Crane valve dependability—and what it means in dollars and cents to the user.

This Crane cast steel wedge gate valve has seen more than 28 years of service. It is installed in a line from the steam header in the plant of Scott Paper Company's West Coast Division, Everett, Wash. The 8-inch, 300-pound valve is operated 2 or 3 times a week. After almost 3 decades of hard, continuous service on 450°F. steam at 250 psi.,

this rugged, precision-built Crane valve still closes tightly and easily. Yet it has required only routine maintenance.

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shows up clearly in his Budget Message in which he estimated fiscal '59 revenue at \$74.4 billion—almost \$2 billion more than has been forecast for the current fiscal year. To achieve this goal the economy would have to be going full blast by July 1 in order to have the tax take reach the \$74.4 billion figure by June 30, 1959.

Government Bets on Defense Spending

The President and his economic advisers emphasize the buoyant effect stepped up defense spending will have on the economy. There's no doubt it will help, but the odds are that it won't be as much of a stimulant as Mr. Eisenhower has indicated.

The increase in national security spending is, after all, only \$1 billion more than is earmarked for fiscal '58. And in our king sized economy, one billion dollars doesn't make much of a smash.

Inflation Softens Big Budget Impact

Another important factor to remember is inflation which will absorb much of the impact of increased spending by weakening the purchasing power of the government outlays. This means that even though the government will be spending more, the volume of goods and services affected will not rise by a proportional amount.

Even in the last recession there was a mild degree of inflation. Although during 1954 the Wholesale Commodity Index (excluding farm products) rose only .002 per cent, metals and metal products—which make up the bulk of military hardware items—rose two per cent. And wage rates in durable goods manufacturing industries also climbed two per cent.

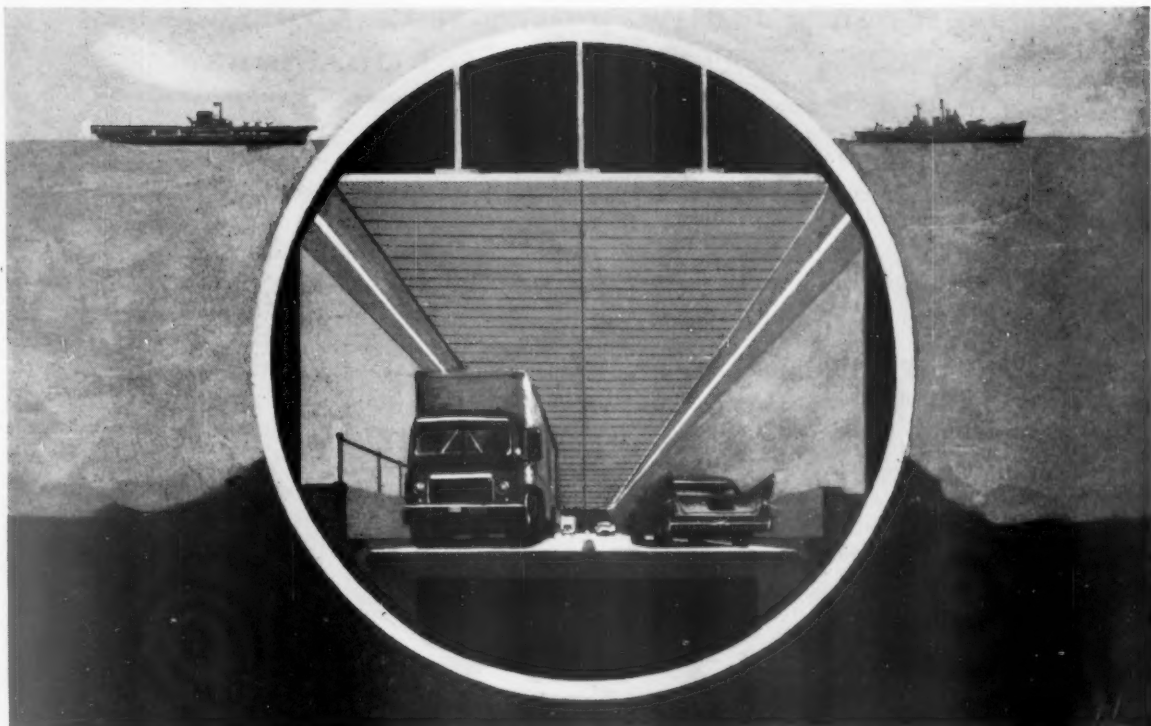
Using two per cent as the inflation factor in the fiscal '59 budget, defense spending would only be about \$100 million more than at present. And the buying power of the overall budget would be whittled down from \$73.9 billion to about \$72.4 billion in current dollars. This would be even less than the budget for the current fiscal year.

It's also probable that the inflation factor between mid-'58 and mid-'59 will be more than two per cent. For example, a recent survey of purchasing agents by PURCHASING Magazine (January 20, 1958, p. 19) showed that 55 per cent of the P.A.'s expect to pay more for the materials they buy than they did in '57. Also probable is the fact that government expenditures in fiscal '59 will exceed the budgeted \$73.9 billion (see Washington Report, p. 25). Net result: increased government spending will certainly help the economy but it's not going to have night-into-day impact.

What's the Overall Economic Outlook?

Other forces President Eisenhower mentioned as helping to turn the downtrend in the near future: increased spending by state and local governments; continued high level of consumer spending; stepped up rate of home building.

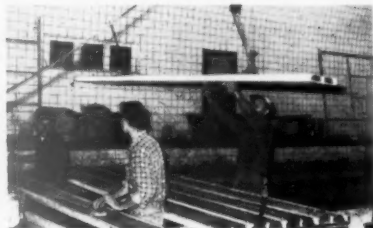
These are certainly plus factors but they do not seem strong enough to make a recession-to-boom switchover. Overall the economic view looks like this: continuation of the recession for several months, then a leveling off period, with the real spurt not starting until fairly late this year.



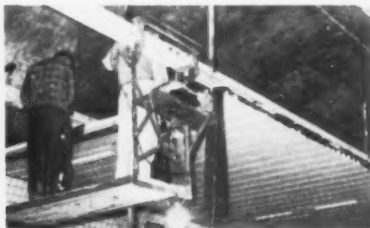
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AND IN... each 12' 9" panel is then hoisted into place and suspended from ceiling hangers. Close fit demanded rigid tolerances throughout.



IN PLACE... the completed ceiling, one side shown in place, has a clean, modern look. Same idea can be used in other structures including passageways, halls, tunnels, etc.

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Because of the close fit the panels required, specifications

for the aluminum extrusions called for better than commercial tolerances. To meet these, Bridgeport engineers worked closely with the project engineers in helping to solve design and installation problems. Extreme care in extruding and close inspection produced shapes that more than met the rigid requirements.

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The P.A.'s Outlook

- January Intensifies Business Decline
- P.A.'s Cite New Order Reduction
- N.A.P.A. Notes 'Plodding Start'

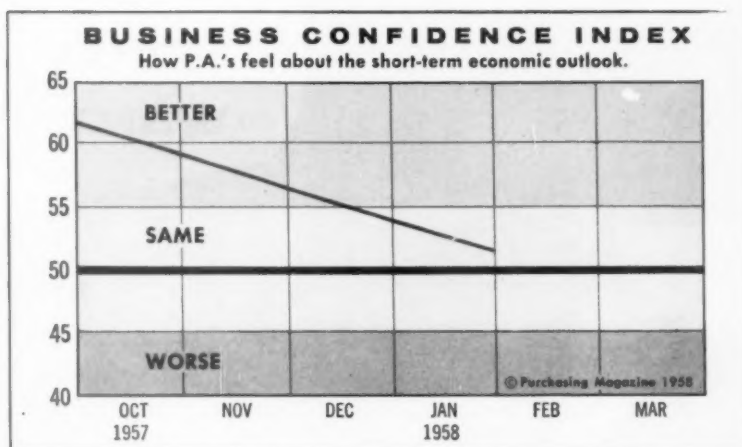
PURCHASING AGENTS are virtually unanimous in the opinion that business in 1958 started off at a low level and will continue on a reduced basis, at least for the first half. This composite view was expressed in the January reports of PURCHASING Magazine's Opinion of Business Poll, the National Association of Purchasing Agents, the Purchasing Agents Association of Chicago and the quarterly report of the Purchasing Agents Association of Syracuse and Central New York.

In the PURCHASING Magazine survey, P.A.'s cited the reduction of new orders, production cutbacks and other similar symptoms of a recessionary period.

However the purchasing executives did see a glimmer of light in the midst of the gloom in the expected increase in missile spending by the government this year. A New England P.A. noted that "more missiles for our Navy" will mean increased production at his plant. A greater number of "government contracts in the missile field" will bolster the economy, added a buyer at a Middle Atlantic industrial corporation.

No Immediate Effect

But even additional missile and other defense money pumped into the economy from Washington will not have an immediate effect, many said. As the purchasing agent of an electronics manufacturer noted, "in-



The Business Confidence Index dropped over three points in January to 50.8, marking the fourth straight month that purchasing agents voiced their pessimism about business conditions for the short term. The index has dipped steadily in recent months and shows every indication of heading into the "worse" category within the next few months.

creased emphasis on the defense budget being rasied more than likely will not have an added impact on business until the third or fourth quarter."

The purchasing agents participating in the N.A.P.A. survey mentioned "the plodding start" of business in 1958. New orders are at the lowest since 1949 and almost half of the executives stated that January production was down from December.

Prices Competitive

"Not since before World War II have so many said that their production situation is worse," the report stated. But it notes "a definite thread of optimism concerning the future." A "significant number" of those reporting said "we are at or near the bottom (and) hopefully expect and predict a definite upturn this year.

"With all materials readily available, the law of supply and demand is in full operation and prices are more competitive than they have been in years," the

N.A.P.A. summary concludes.

The Chicago association survey is in substantial agreement with the national report "Caution would seem to be the keynote during the first half of 1958," it sums up.

The Mid-Western group feels that "buyers are most reluctant to make forward commitments beyond actual known requirements." It notes also that although production of durable goods is declining moderately, "prices are strongly resisting downward pressure."

Chicago P.A.'s assert that reduced employment, combined with a decline in the number of hours worked, is cutting into disposable income.

Consensus of Syracuse purchasing agent opinion follows along the same track. Its findings indicate that "the present slow-up will continue well into 1958."

The survey reveals that the members reporting represent all industries "with the notable exception of steelmaking, automobile and airplane manufacture."

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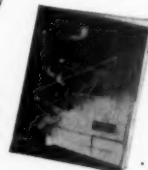
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Business Trends

- FRB Makes Several Moves To Stop the Slump
- Economic Indicators Show Recession Is Deepening

CONTINUED DECLINE of business which shows up clearly in these charts of the major economic indicators has forced additional action by the Federal Reserve Board. Last month FRB made the following moves:

(1) Reduced the margin requirement for stock investors from 70 per cent of the price of the stock to 50 per cent. Effect of this change is mainly psychological and is designed to stimulate investment.

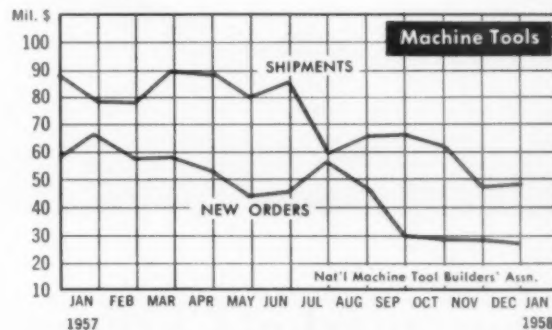
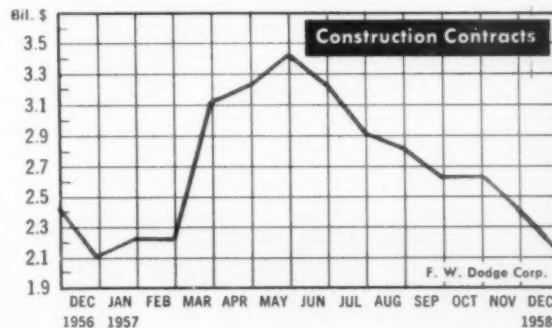
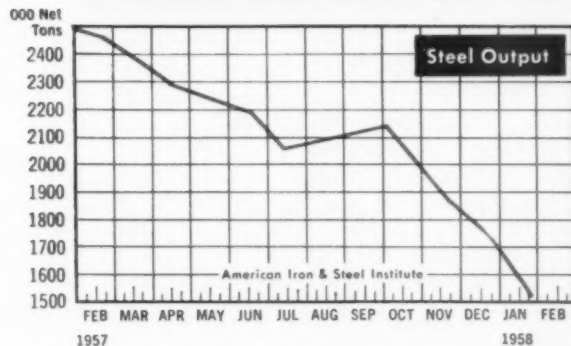
(2) Made another reduction in the discount rate, lowering it from 3 per cent to 2.75 per cent. This change makes it less costly for banks to borrow money from the Federal Reserve and as a result makes it easier for the banks to lower the interest rates they charge business and the public.

In line with the cut in the discount rate some of the commercial banks lowered their prime lending rates (the interest rate the banks charge their largest, best-risk customers) from 4.5 per cent to 4 per cent.

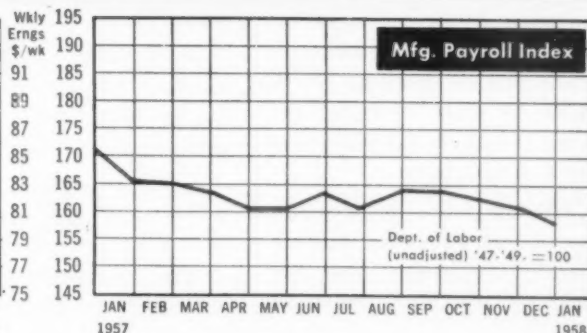
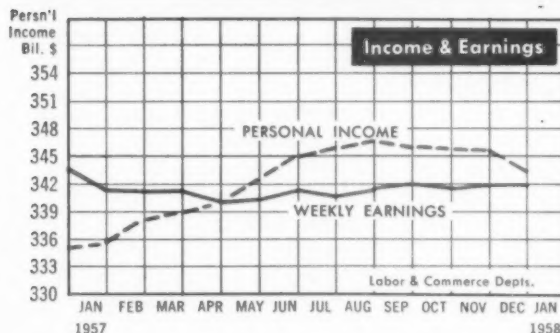
As yet, it's too early to tell how much effect these changes will have on the economy. However, it seems likely that FRB may again be forced to make changes that will ease the money supply even more.

Though these developments were encouraging, the latest statistics on the economy give no indication that the business slump is bottoming out. Figures for December show that there was a big drop in the FRB Industrial Production Index (see p. 7), that unemployment

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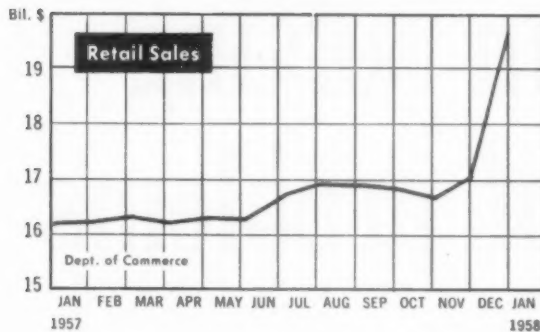
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Seattle to San Francisco	\$1.40	40¢
New Orleans to New York	\$1.90	50¢
Los Angeles to Washington, D.C.	\$2.50	65¢

Add 10% Federal Excise Tax

Business Trends

TRADE



was up substantially to 3.4 million, and that personal income was down for the fourth month in a row.

Further pointing up the slump is that fact that the Manufacturing Payroll Index dropped again, marking the third consecutive month of decline. The index in December was at 158.1 ('47-'49=100) compared with a December '56 reading of 171.4. Average weekly manufacturing earnings held their own, however, remaining at \$89.92.

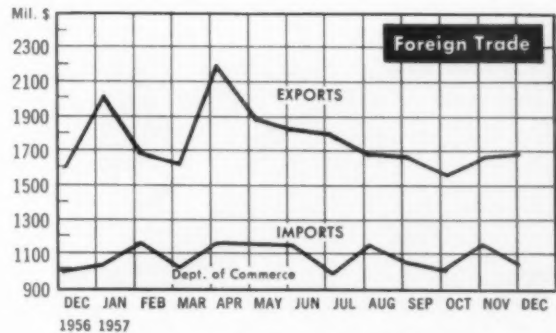
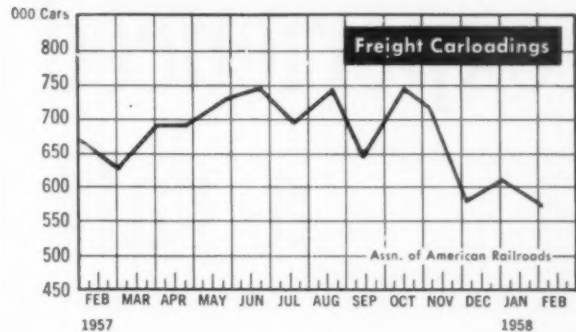
Among the hardest hit industries is steel with output in December down about 40 per cent from December '56. Production in January continued to slump and the outlook is that the whole first quarter will be a poor one.

Freight carloadings—one of the key economic indicators since it reflects movement of goods throughout the nation, also slipped. During the first four weeks of December freight carloadings totaled 2.4 million a drop of about 25 per cent from December '56.

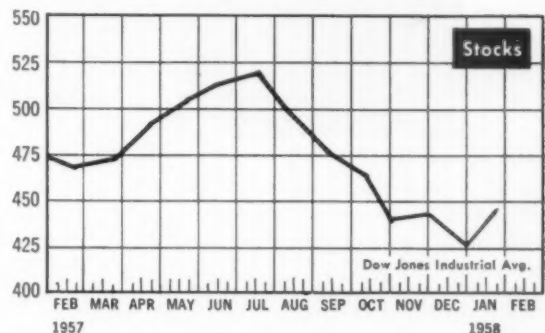
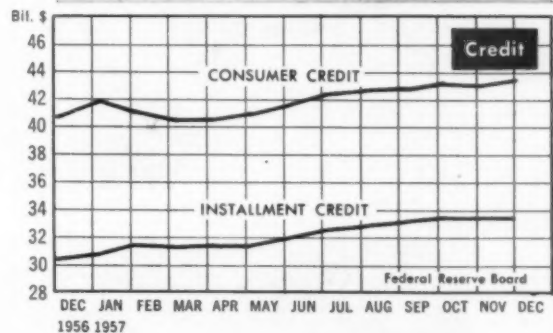
Retail Sales Show Strength

On the other hand, one of the continuing bright spots in the economy is retail sales which shot up in December to \$19.7 billion, \$3.6 billion more than in December '56. For the year, retail sales in '57 topped '56 by 5 per cent. The December sales gain was achieved mainly as a result of higher sales by department stores and other nondurable goods outlets which more than offset the decline in automotive sales.

Housing starts which are expected to show a gain during '58 ended up '57 on the decline. Seasonally adjusted annual rate for December housing starts was only 970,000 units. For the year as a whole, '57 housing starts amounted to 990,000 compared with slightly over 1.1 million in '56. It is expected that housing starts this year will top the 1.1 million mark.



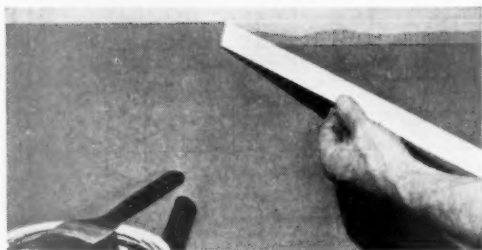
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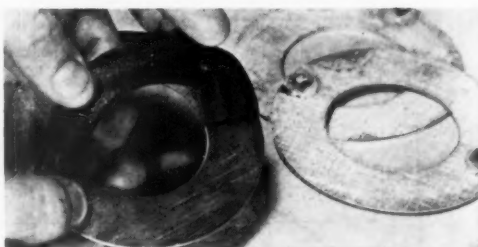
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Price Trends

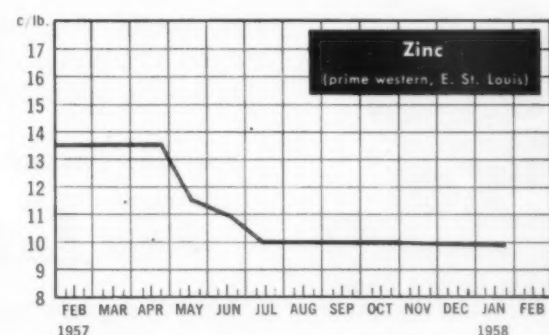
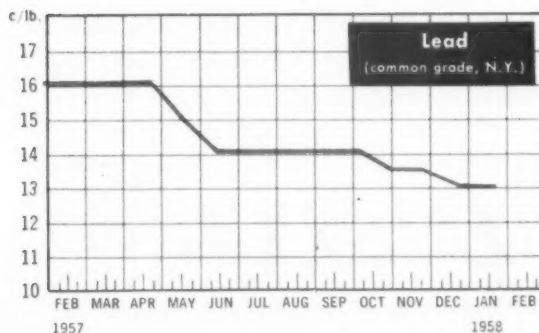
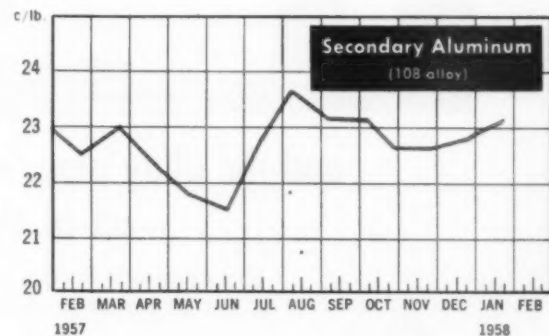
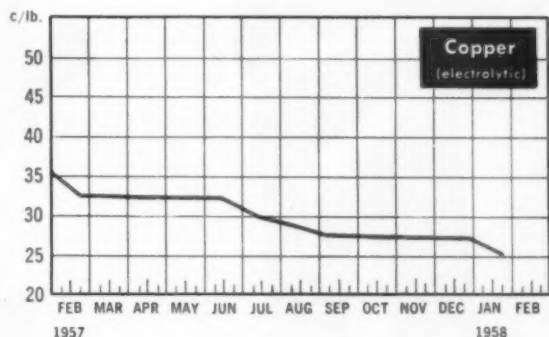
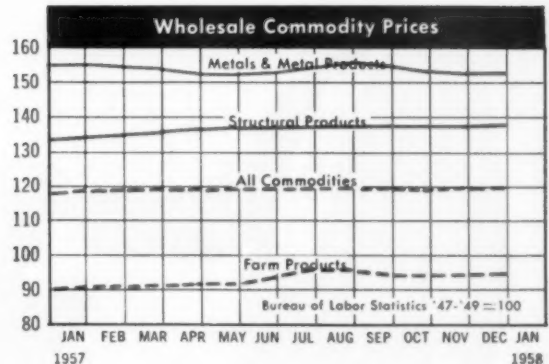
- **Copper Weakens, Production Cut Back**
- **Nonferrous Markets Slow and Spotty**

DESPITE THE FALL in both the producers' and the custom smelters price last month, there was no appreciable pickup in copper buying. Neither the price cuts nor the production cut-backs announced in recent weeks were able to shake the lethargy out of the red metal market—and copper men don't rule out the possibility of even lower prices unless more markets develop.

Surplus Copper Stocks

Early last week, the custom price was at its lowest level since September 1950 and the copper quotation on the London Metal Exchange also hit a seven year low. However this should not be too surprising in light of the fact that the world's surplus stocks of refined copper were over 458,000 tons, the highest at least since 1947 (when world-wide statistics first were made available).

Prices of three other nonferrous metals—lead, zinc and tin—have also been in the doldrums lately. And aluminum prices, both primary and secondary, did not change much in the first month of 1958, in spite of the realization that the industry now has about 150,000 tons of idle capacity. However some aluminum producers that announced expansion plans earlier have slowed down a bit. Alcoa, for example, has cancelled construction already started on two works that would have added another 170,000 tons to its capacity, and has also closed down some of its smelters.



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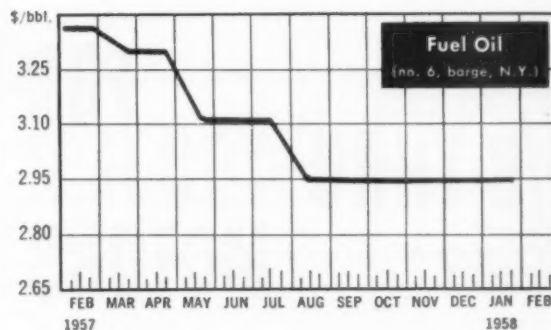
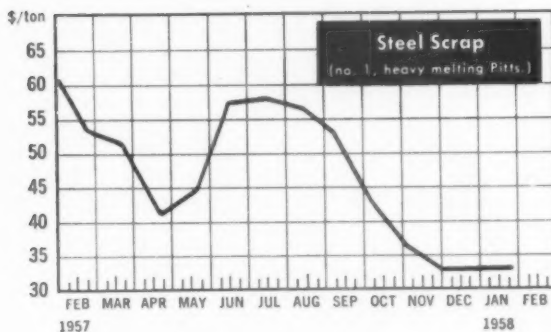


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Price Trends



Rubber prices weakened slightly since the news from Indonesia began hitting the front pages. Little interest is being shown by buyers, although more activity is predicted in the next few months.

Raw cotton has shown only small price variations recently, with many purchasers awaiting the latest word from Washington before proceeding. However, there seems to be little doubt that the price will firm up during the first quarter.

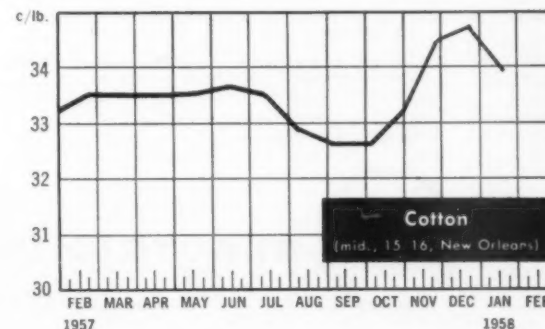
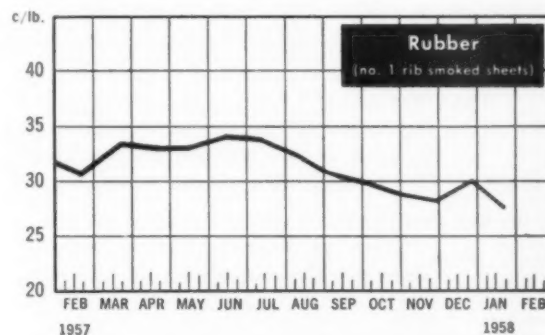
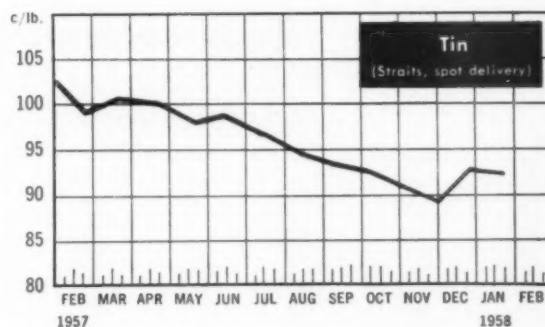
Boron Prices Up

Boron—one of the "wonder" metals of the missile era—will be more expensive this year. Two of the leading producers have increased prices on a number of their products, citing the usual reasons—higher labor and material costs.

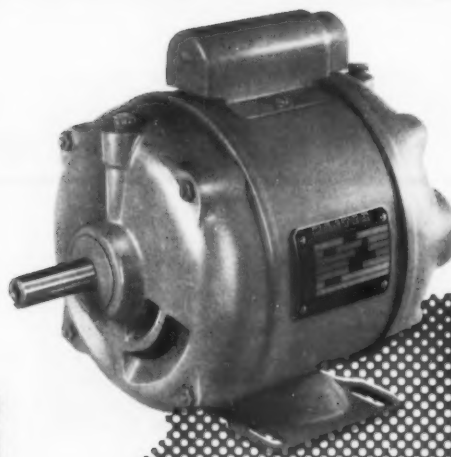
A drop in No. 6 fuel oil prices along the East Coast seems imminent. The same grade is available more cheaply at Gulf Coast ports.

The BLS Wholesale Commodity Price Index rose .3 per cent in December, with most of the advance due to the increase in prices of farm products and processed foods. Machinery and motive products showed a rise for the 33rd consecutive month, and furniture and other household durables went up .5 per cent. Metals and metal products declined again, though, because of lower average prices for nonferrous metals, steel scrap and heating equipment.

Consumer prices, as recorded by the Bureau of Labor Statistics Index, remained unchanged at 121.6 in December, the record level reached in November. This figure was about 3 per cent higher than at the end of 1956 and a whopping 19.4 per cent greater than the pre-Korean War level.



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Pulse of Business

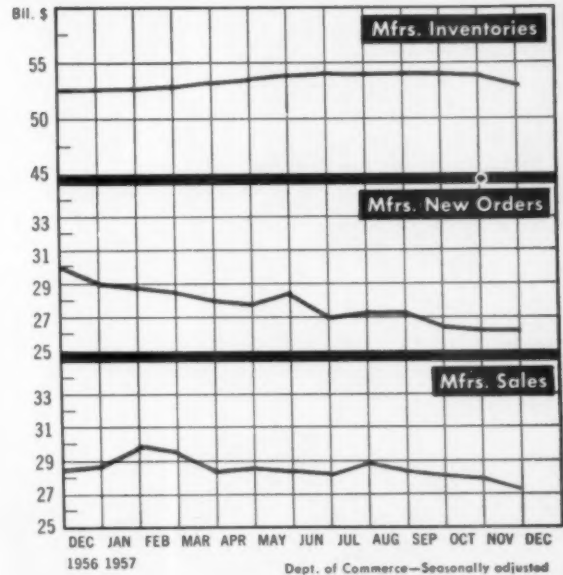
Sales, Inventories, Orders

• Durable Goods Industries Bear Brunt of Recession

AS THE RECESSION slide continues, it's the heavy durable goods industries that are taking the beating—especially primary metals, machinery and the non-automotive transportation industries.

Here's the picture: unfilled orders for the durable goods group dropped \$1.3 billion during November to a \$49.3 billion level (unadjusted). This is equivalent to 3.6 months of sales as compared with a 4.2 month ratio in the same month last year. Sales for the heavy goods industries totaled \$13.5 billion down three per cent from the previous month.

Inventory cutbacks were also most severe in the heavy industry groups. According to latest statistics, durable goods inventories totaled \$31.4 billion in November, a decline of \$400 million from the previous month.



Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)

All Manufacturing Industries	1956	1957
Durable-goods industries	14,294	14,132
Primary metal	2,531	2,182
Fabricated metal	1,487	1,547
Machinery	4,189	4,314
Transportation equipment	3,234	3,407
Lumber and furniture	1,019	940
Stone, clay, and glass	741	668
Nondurable-goods industries	14,186	14,083
Food and beverage	4,240	4,278
Tobacco	337	378
Textile	1,109	1,040
Paper	888	932
Chemical	1,940	1,951
Petroleum and coal	2,763	2,803
Rubber	462	481

1956	1957			
November	August	September	October (r)	November (p)
28,480	28,638	28,215	28,064	27,386
14,294	14,297	14,132	13,932	13,505
2,531	2,362	2,182	2,224	2,153
1,487	1,520	1,547	1,535	1,458
4,189	4,281	4,314	4,265	4,106
3,234	3,448	3,407	3,297	3,289
1,019	925	940	930	860
741	708	668	650	639
14,186	14,341	14,083	14,132	13,881
4,240	4,357	4,278	4,331	4,314
337	354	378	356	347
1,109	1,072	1,040	1,029	1,018
888	915	932	917	878
1,940	2,008	1,951	2,002	1,945
2,763	2,920	2,803	2,895	2,787
462	514	481	490	n.a.

Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)

All manufacturing industries	1956	1957
Durable-goods industries	32,210	31,742
Primary metal	30,647	4,326
Fabricated metal	3,891	3,151
Machinery	3,157	3,123
Transportation equipment	10,404	10,609
Lumber and furniture	7,714	8,035
Stone, clay and glass	1,895	1,872
Non-durable goods industries	1,168	1,210
Food and beverage	21,563	22,461
Tobacco	4,814	4,805
Textile	1,895	2,024
Paper	2,674	2,649
Chemical	1,338	1,429
Petroleum and coal	3,582	3,737
Rubber	3,188	3,517
	1,035	1,074

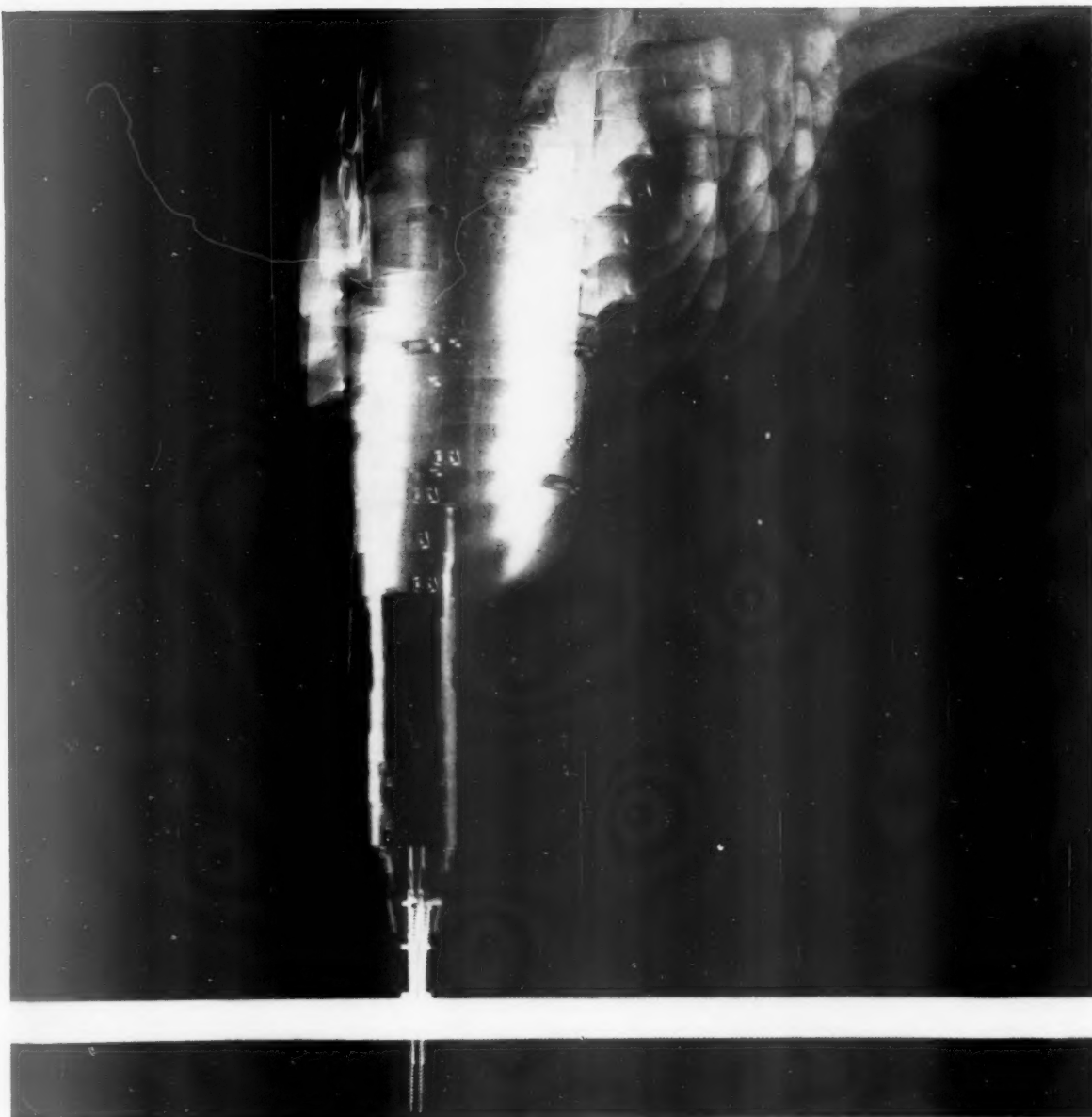
52,210	54,203	54,166	54,103	53,797
30,647	31,742	31,820	31,754	31,380
3,891	4,326	4,344	4,356	4,265
3,157	3,151	3,123	3,143	3,112
10,404	10,609	10,658	10,583	10,509
7,714	8,035	8,049	7,979	7,825
1,895	1,872	1,877	1,880	1,866
1,168	1,210	1,251	1,273	1,262
21,563	22,461	22,346	22,349	22,417
4,814	4,805	4,684	4,725	4,759
1,895	2,024	2,000	1,980	1,969
2,674	2,649	2,631	2,625	2,639
1,338	1,429	1,410	1,423	1,417
3,582	3,737	3,741	3,732	3,739
3,188	3,517	3,597	3,623	3,659
1,035	1,074	1,074	1,097	n.a.

Manufacturers' New Orders Seasonally Adjusted (Millions of Dollars)

All manufacturing industries	1956	1957
Durable-goods industries	29,972	27,325
Nondurable-goods industries	15,776	13,160
	14,196	14,165

29,972	27,325	26,565	26,226	26,182
15,776	13,160	12,519	12,154	12,326
14,196	14,165	14,046	14,072	13,856

— preliminary — revised — n.a.—not available



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PURCHASING

Washington Report

Recession: Government Moving To End Inventory Cutback Trend

ECONOMIC REPORT of the President traces much of the softness in the economy to business caution—especially as regards inventory. In contrast to 1956 when business inventories increased by \$4.6 billion, there was no increase last year.

What happened was that in the first three quarters of last year the increase in inventory was very small, and in the last quarter there was a substantial drop.

To alter the pattern of a receding economy, the Administration is planning to reverse this attrition.

Government action during much of last year was indirectly aimed at cutting down industry-held inventory. This was purely a budgetary maneuver. The Department of Defense was operating under strict injunction not to spend more than \$38 billion, and to comply had to cut its rate of buying.

During the last six months of '57, the Department of Defense spent \$5.4 billion for hardware, and \$2.2 billion for goods and services. At this reduced rate, the contractors and suppliers involved in their complex chain of supply cut their procurement schedules, and reduced their inventory levels.

DOD was fully aware of what would happen, and in fact welcomed the reduction in inventory levels. In the case of cost-plus-fixed fee contracts, the lower levels of inventory meant a reduced rate of cash outgo for defense.

There was, however, no valid estimate of how this policy would

affect the rest of the economy. The governmental machinery was so steeped in its assault on inflation that the other side of the picture was overlooked—namely, deflation and large-scale unemployment.

See Higher Prices

Now that these chickens have come home to roost, the Administration is changing its course sharply. Successive drops in rediscount rate will make commercial paper easier, and inven-

tory cheaper to finance. However, purchasing agents can expect higher prices which will partially offset the lower cost of carrying inventory.

At the same time, along with lower costs of financing, the Department of Defense will increase its rate of spending substantially. In contrast to the rate of spending in the last half of '57, the projected rate for the last six months of this year is \$7.5 billion for hardware and \$3.3 billion for goods and services.

• Does Balanced Budget Have the "Shakes"?

PRESIDENT'S budget remains mildly dedicated to a balance between Government expenditures and receipts. The Budget as sent to the Congress projects expendi-



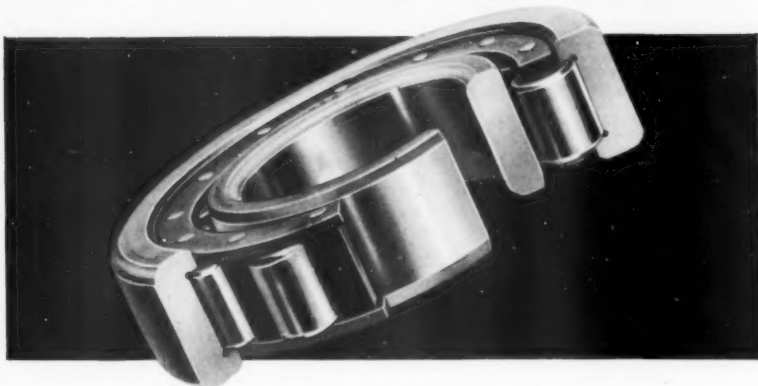
Budget Cutter Harry Byrd (D-Va.) as usual takes a dim view of government spending plans. He terms the new \$73.9 billion budget "reckless".

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☐ Are rollers distributed evenly to prevent "pulse" and vibration?

Roller Construction

☐ Are the rollers crowned for optimum load distribution?

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Washington Report

tures of \$73.9 billion and receipts of \$74.4 billion—a budget surplus of a half billion for fiscal '59.

To yield these higher budget receipts—\$2 billion more than the Government will collect in fiscal '58—the economy will have to yield more in the way of tax money. In the absence of higher rates—and there is no disposition to raise the rates—this means that incomes and profits will have to be greater in fiscal '59 than in fiscal '58.

The Government is gambling that its policies will stimulate the economy quickly. Here is what the Government is counting on:

Individual income tax yield to increase from \$37.2 billion to \$38.5 billion.

Excise taxes to increase from \$8.898 billion to \$9.28 billion.

The corporate tax yield increase is expected to be minor, from \$20.385 billion to \$20.4 billion.

● Push Higher Tariffs For Nonferrous Metal

FOR THE present on the materials side, there is growing pressure by domestic producers to cut down on imports by raising tariff barriers. Marginal domestic producers of nonferrous metals have been closing down non-profitable mines, and normally this would tend to correct conditions of oversupply.

The problem is that some foreign sources with high yield and low production costs can step up output and defeat any cutbacks made by U. S. producers.

Seek Higher Tariffs

The immediate gambit by domestic producers has been, in the case of copper, to seek an increase in levy on imported copper to 4¢ a pound. This action would tend to make foreign producers pull back sharply on production, as such an increase in U. S. tariff would affect their long-term profit position very substantially.

As a result present materials surpluses make Congressional ap-

proval of the President's call for five-year extension of reciprocal trade highly unlikely. Shorter term extension and less latitude in cutting tariffs are indicated.

● Congress is Critical Of Defense Program

CONGRESSIONAL reaction to the Administration economic and fiscal program is one of skepticism (1) as to whether the defense speedup fully reflects the degree of urgency needed to keep ahead of the Soviets, (2) as to whether the President's program will restore business confidence, and finally (3) there is serious question in Congress as to some of the cutbacks in non-defense spending.

On defense spending, it is likely that the Congress will authorize greater outlays than the President asked for if not in its direct appropriations then in supplemental appropriations later in the year.

In economic measures, if the Administration measures do not turn the tide in production and employment, Congressional pressure will be pointed at a cut in taxes.

● Propose Change in Tax Depreciation Laws

A NEW tax depreciation formula, with wide industry backing, would spur purchase of capital equipment.

Most significant drop in industrial economy has been drop in business outlays on plant and equipment. From the first quarter of 1955 to the third quarter of 1957, buying of new plant and equipment has been of boom proportion.

In the fourth quarter last year, however, the rate of spending dropped. And for the year, the money spent on new plant and equipment showed a gain, but this increase is mainly accounted for by higher prices.

The present effort to alter the tax depreciation laws is aimed at making new plant and equipment



Industrial Series 1000 — External rings



Industrial Series 2000 — External rings



Industrial Series 3000 — Internal rings



Industrial Series 3100 — External rings

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Precision-engineered INDUSTRIAL Retaining Rings ... internal, external and open types ... are available in a wide selection of sizes and finishes. Solve your fastening problems simply and economically with the rings that cut machining and tooling expense, save material, simplify and speed assembly.

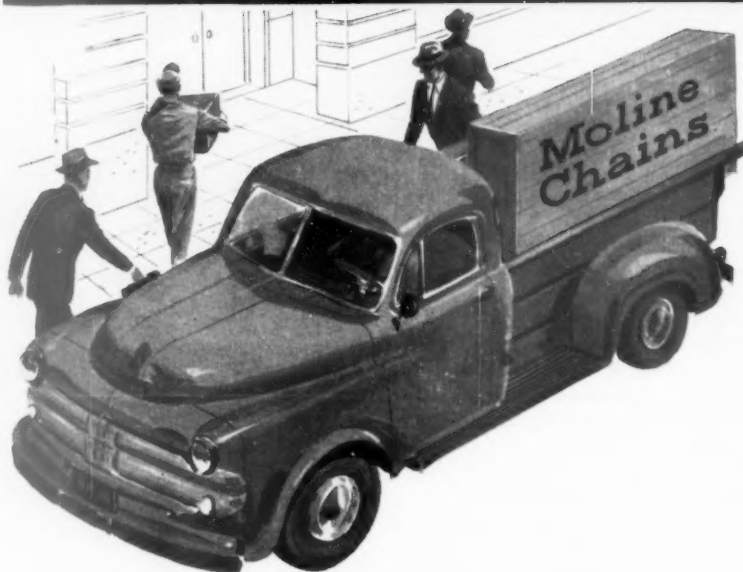
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IRR Originators of modern retaining ring dispensing
INDUSTRIAL RETAINING RING COMPANY

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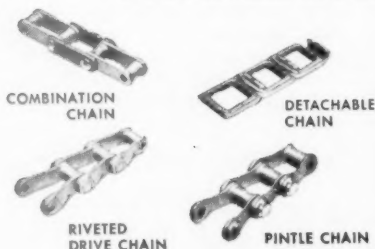
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Washington Report

purchase more attractive. Nub of the tax depreciation problem is that under present practice, the law permits companies to depreciate only the original costs of plant or equipment. Under this system, the depreciation allowances fall far short of the current costs of replacement.

Use LIFO Approach

House Committee on Ways and Means, now considering tax change proposals, was told by industry spokesmen that some method for treating plant and equipment investments similar to the LIFO approach to inventories would be more equitable. Under such a system, when plant and equipment are used up or replaced, allowance would not only be made for the original cost of the equipment, but for current replacement as well.

● Cost Proving Roadblock For Highway Program

Bitter pill for convened Congress is the mounting cost of the Interstate Highway Program.

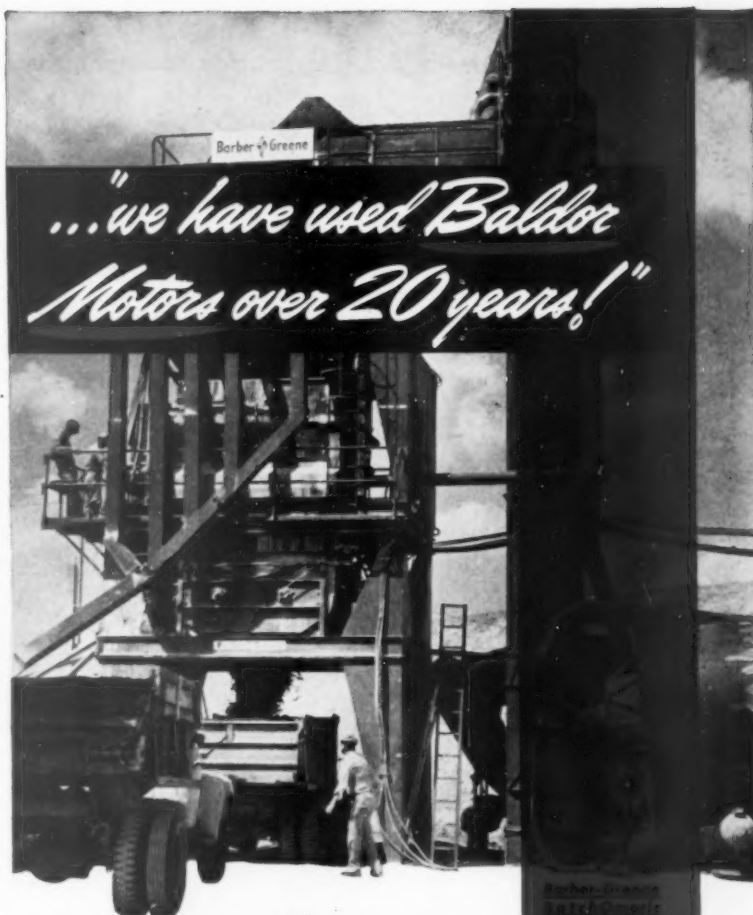
Interstate network of roads (originally 40,000 miles linking all major U.S. cities—later expanded by an additional 1000 miles) was to have cost \$27 billion. This was to be financed by increases in gas, oil and tire taxes.

Inflationary factor of roughly 11 per cent—and a now concise picture of what road building actually costs—have boosted the road-cost picture to \$38.5 billion.

Where and how to get this money is a problem that has no simple solution. Another increase in gasoline taxes now is out of the question.

More likely solution is a plan to build first the roads that would carry most traffic. This would encourage motorist and trucking America to burn more gas and oil—resulting in a bigger tax yield.

FEBRUARY 3, 1958



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Shipment of tape for you, Charlie. How come you changed brands?

So now you want to run the Shipping Department! Changed because me and Purchasing agreed that Safetex would save us time and money.

Knowing you, Safetex must save work, too!

If you don't stop yakkin', we'll be outta tape before you get this unloaded!



Any smart Shipping Department foreman can tell you that SAFETEX seals right . . . the first time, every time! For efficiency and economy, order the gummed tape that smart Shipping Department foremen want . . . SAFETEX!

SAFETEX SUPERSTANDARD GUMMED TAPE



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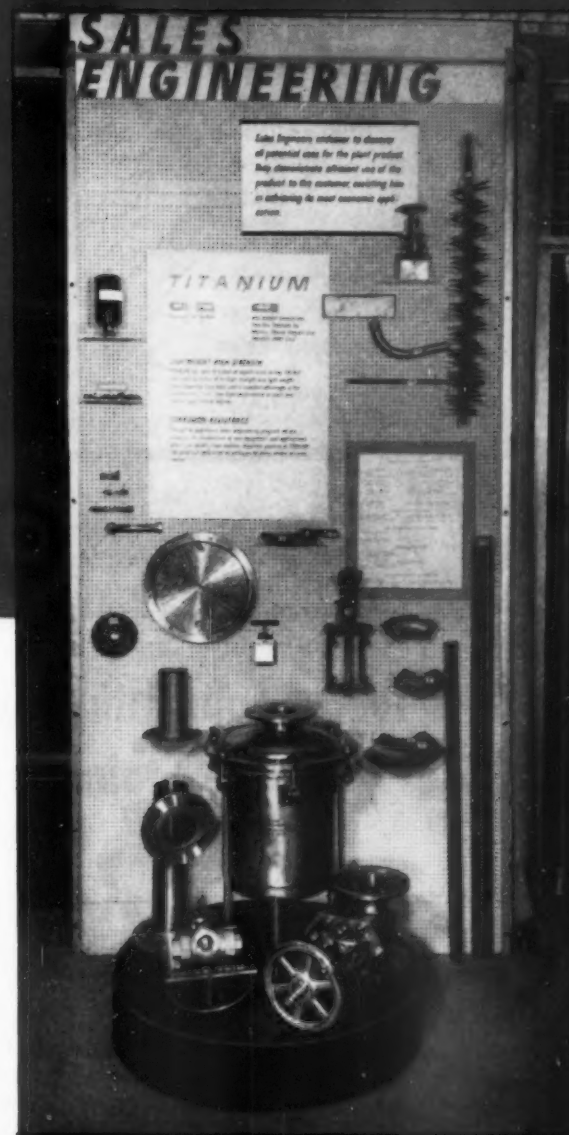
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Many of our Titanium products have been installed in chemical, paper, and pulp plants. Pipe, Tubing, and Fittings are available in sizes 3 1/2" O.D. and larger . . . smaller sizes can be produced, depending on the quantity needed. Let us know your requirements; we will be glad to work with you on any Titanium project — large or small.



Fabricated Pipe, Pressure Vessel and 4" Valve.



Sparger Pipes—5" O.D., 1/8" Wall, with Titanium Flanges.



4" Titanium Valve installed in Chemical Plant.



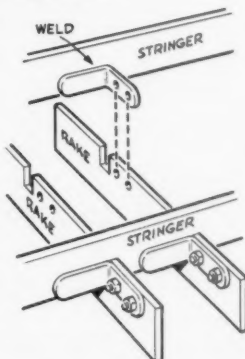
Fabricated Pipe Detail—4 1/2" O.D., .125" Wall.

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PREVIOUS PROCEDURE

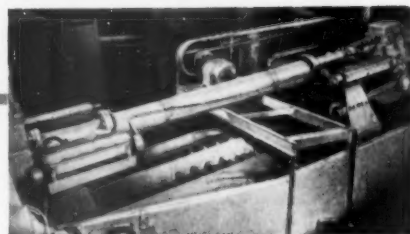
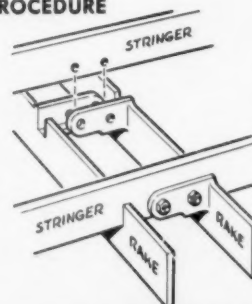
- 1 Drill bolt holes in "clip angles."
- 2 Weld clips to stringer.
- 3 Drill holes in rake blades.
- 4 Mill stringer slots in rake blades.
- 5 Bolt rakes to clip angles.

REPEAT FOR EACH BLADE



PRESENT PROCEDURE

- 1 Drill bolt holes in stringer.
- 2 Bolt one-piece castings (complete with holes, slots, and flanges) IN RIGHT- AND LEFT-HAND PAIRS, to stringers.



Type H rake classifier made by Dorr-Oliver Inc., of Stamford, Conn., separates solids in liquid-solid mixtures into two fractions according to particle size. Fine materials overflow with liquid at lower end of inclined tank; larger particles settle to tank bottom, are continuously raked up inclined slope and discharged "over top". Rake blades move in oval track due to motion of rocker head, must be precisely aligned to move settled material up to next rake without either scraping or undue clearance.

How to Cut Fabrication Costs with Close-Tolerance Stainless Castings

Previous method of attachment of rakes to stringers was by "clip angles" welded to stringers, drilled and bolted to simple flat blades themselves drilled and slotted as shown. Construction was expensive, and often unsatisfactory, in that heat of welding tended to put rakes out of alignment.

In redesigning, Dorr-Oliver decided to eliminate the clip angle as a separate third piece by incorporating it into the blade castings. Original conception was to cast rough slots and holes, then mill and drill them to dimensions. Cooper Alloy, after study of the piece, determined that with close-tolerance plastic shell cores, both bolt holes and stringer slots could be cast directly in the rake blade, without need of further machining. Also, that by using right- and left-hand patterns of rake flanges, two rake blades could be bolted to stringers with one set of bolts.

Casting requirements stringent

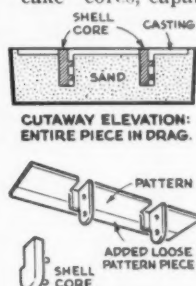
- Bolted face of each of the upright flanges required a smooth finish (250 A.S.A. Standard).

- $\frac{1}{16}$ " cored holes had to be smooth, accurate to $\pm .010$ ", and precisely positioned for proper fitting of parts.
- Stringer slots had to be precisely positioned, accurate in dimensions to $\pm .025$ ".
- Multiplicity of patterns for different widths of rake blades had to be reduced, for economy.

Casting solutions

For the critical flange faces and bolt holes, shell "cake" cores, capable of holding precise dimensions down to $\pm .010$ ", were prepared. They were inserted and became an integral part of the green-sand molds that formed the less critical outer blade areas.

To save cost of a complete new pattern for each rake size, all sizes of rake were designed to have the same blade thickness and flange dimensions. Patterns were then made of the narrowest-width blade in each series,



(Advertisement)

loose pattern pieces being added to increase blade width of the larger rake sizes.

Results—"These rake blades", says Dorr-Oliver, "were used directly as cast, with no additional machining of any kind. Dimensions were precise, surfaces smooth, and finished alignment better than with previous 3-piece welded assembly. New procedure saves time and handling, and has reduced our manufacturing costs on this piece considerably."

Such economy possibilities are available in almost any shape, no matter how simple, or how "cut-and-dried". Cooper Alloy has specialized for 35 years in achieving such uncommon results in close-tolerance stainless steel castings, and can do the same for you.

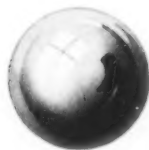
To check on it, why not take advantage of our Foundry Engrg. Service? Just send us (without obligation) a blueprint or outline of your problem part, for cost analysis, to: Foundry Products Division, COOPER ALLOY CORPORATION, Hillside, N. J.

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20% longer die life...

5% greater production of steel balls



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flowability **IS THE SECRET**

That's right... 20% longer die life and 5% greater production... and all because of Keystone "XL" Wire's exceptional flowability.

This sums up the experience of Sterling Commercial Steel Ball Corporation, Sterling, Illinois. Sterling has cold headed steel balls by the millions — from $\frac{1}{8}$ inch to $\frac{3}{4}$ inch in diameter — since production was initiated ten years ago. Sterling's steel balls are used primarily in conveyors, castors, office furniture, etc.

Officials of the company report that the superior forming characteristics of Keystone "XL" Wire are in evidence in the initial stage of steel ball production. The steel balls are upset on a single blow, solid die cold-header. With Keystone "XL" Wire flowability, the amount of "flash" left on the newly produced steel balls is small — a mark of quality heading wire. Case hardened steel balls — perfect

in diameter — like those shown above, are standard, high-speed production items when Keystone "XL" Wire is used.

If you are having trouble cold heading parts which are complicated in design, or which demand trueness of form, talk it over with your Keystone representative. He can show you how the uniform high quality of Keystone "XL" Wire can fulfill your requirements. See him soon for complete details, or write direct.



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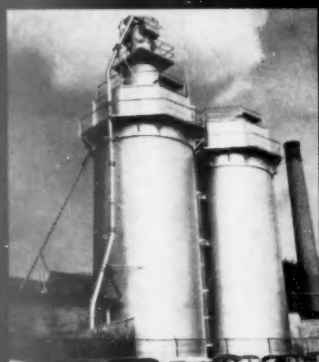
Company _____

Street _____

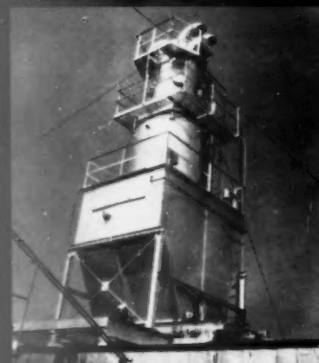
City _____ State _____

Keystone Steel & Wire Company, Peoria 7, Illinois

KEYSTONE
WIRE FOR INDUSTRY



Two Fuller Airveyor conveying lines can be seen at top of silo No. 1. Two 45-foot silos each hold four carloads of wood flour.



Discharging wood flour by Airveyor into 5,000-pound service bins. At top can be seen built-in explosion vents in filter.



Workman starts unloading wood flour with minimum spillage as it is withdrawn from the box car by Fuller Airveyor.

GENERAL ELECTRIC SWITCHES FROM BAG-CARRYING TO AIRVEYOR CUTS HANDLING COSTS 60%

As part of a program to increase plastics production and reduce operating costs at its Pittsfield, Mass. plant, General Electric Company recently called in Fuller Engineers to design systems for handling wood flour in bulk.

Wood flour—used as a filler in phenolic molding compounds—was being handled in 75 and 100-pound bags. Unloading one carload of bags required 16 manhours. Bags were loaded on dollies and wheeled to a distant elevator.

SAFETY FIRST

The two pneumatic Airveyor® materials handling systems, engineered and manufactured by Fuller Company, were installed by its parent company, General American Transportation Corp., providing undivided responsibility. This installation resulted in a 60% saving in handling cost! The two

systems are handled by one full-time and one part-time operator. Manhours to unload one car have been reduced from sixteen to six!

In addition, all equipment is designed to conform to strict safety specifications set down by G-E engineers.

FLOW YOUR WOOD FLOUR

The Airveyor is a system that flows your wood flour through sealed pipes. It's fast, safe and self contained. The pipes can be placed close to ceilings, run underground or through walls.

Whether you process wood flour—or other dry granular materials—look into the many economies of Airveyor conveying. Write today for interesting, detailed literature on Airveyor and other Fuller pneumatic materials handling systems.



"See Chemical Engineering Catalog for details and specifications."

FULLER COMPANY

170 Bridge St., Catasauqua, Pa.

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PURCHASING

PROVED . . . by millions of contacts



NATIONAL ACME
SNAP-LOCK
TRADE MARK

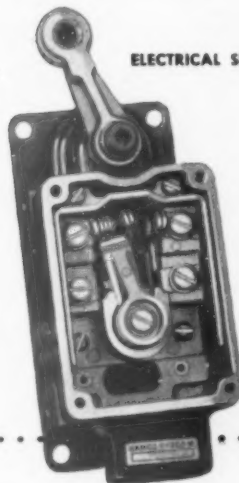
As illustrated below, National Acme SNAP-LOCK Limit Switches employ a basically simple yet positive *snap-action* locking mechanism—with extremely few moving parts. Thus wear is reduced to a minimum and dependable trouble-free service, far beyond normal limits, is assured.

The double-throw contact lever, connected directly by shaft with the latch bar, carries self-wiping coin silver contact points to assure quick action make or break—reducing wear ever further.

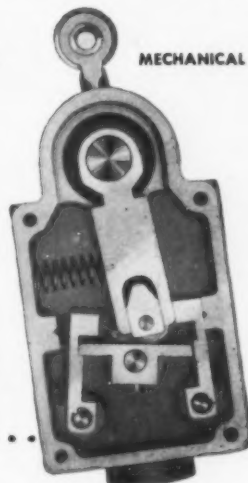
Electrical and mechanical sides are separated by a wall within a sturdy die-cast housing which is fully insulated and is dust and oil-tight.

**THE ORIGINAL
SNAP-ACTION
LOCKING SWITCH**

SNAP-LOCK LIMIT SWITCHES. Made in single-pole and double-pole series, in four types: Standard, Short Travel, Neutral Position and Push Lever. With the exception of the Push Lever Switch, all are adaptable to special enclosures for hazardous location service and may be used with various styles of operating levers. For AC or DC service.



ELECTRICAL SIDE



MECHANICAL SIDE



and now . . .

a new design concept for **CONTROL STATION SWITCHES**
the heavy-duty . . . oil, water, dust tight **GOLD-N-RING**
made by machine tool builders to machine tool specifications

Heavy duty silver-alloy contact points provide maximum electrical capacity, long life.

Heavy duty terminal screws have $\frac{3}{8}$ " thread contact to prevent stripping during installation and permanently secure wires for continuous, trouble-free service.

Single or double-pole contact block assemblies—can be used interchangeably with several types of GOLD-

N-RING push button and selector operator heads. Rated for 600 volts—AC or DC. Meets all Joint Industry Committee and National Machine Tool Builder's Association requirements.

Protected against oil and water seepage in operator head by Sealtight oil-resistant rubber diaphragm. Easily replaces existing switches.

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the **National Acme** company

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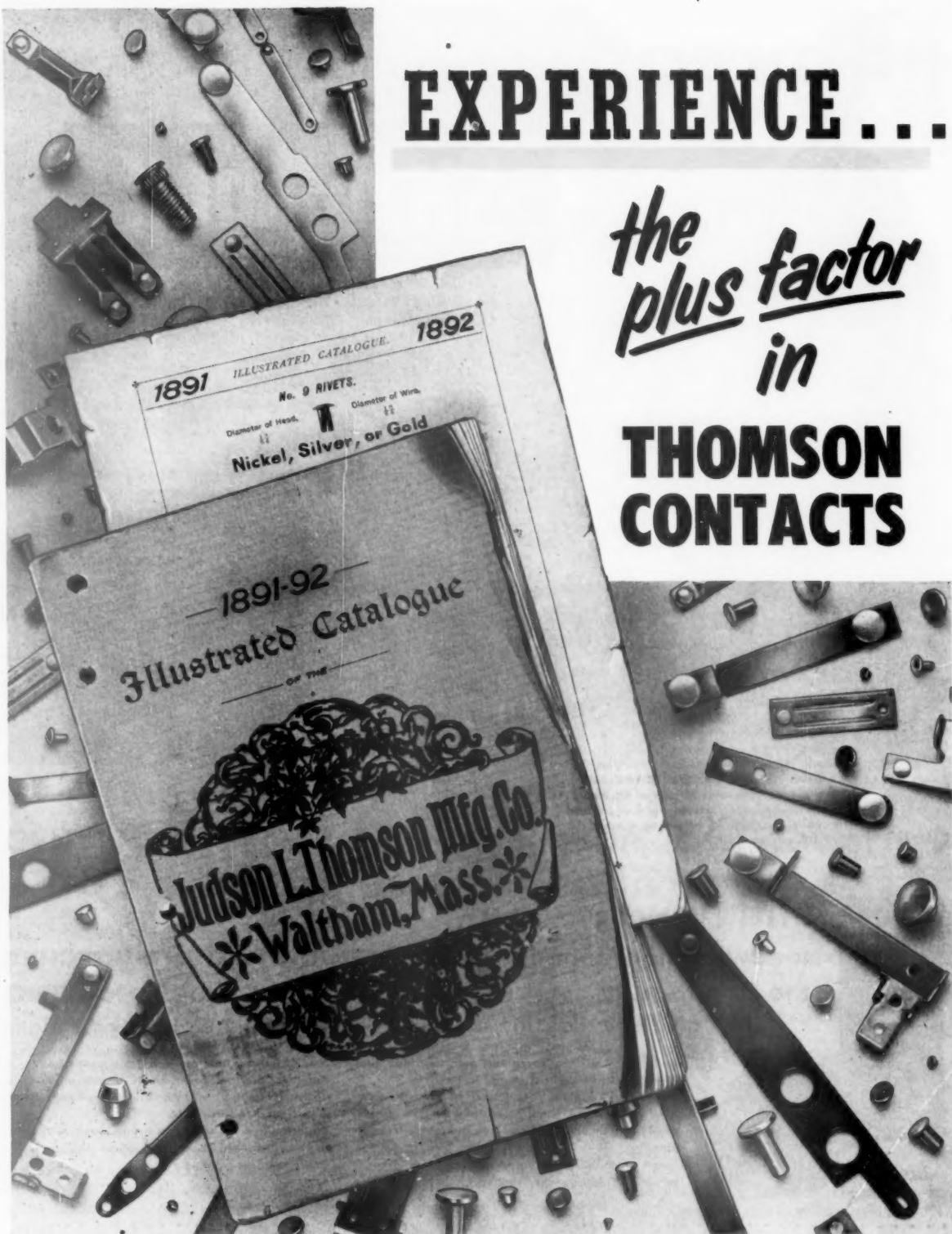
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EXPERIENCE...

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- **JET PUMP MOTORS 1/3 to 3 HP** available in single-phase capacitor start or polyphase induction motors. Open drip-proof and TENV models with standard keyed or stainless steel threaded shafts.

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BIRMINGHAM, ALABAMA -	Alpine 1-0113
BUFFALO 2, N. Y. -	MOhawk 6090
CHICAGO 4, ILLINOIS -	WAbash 2-6212
CLEVELAND 30, OHIO -	SUperior 1-6700
DALLAS 6, TEXAS -	EMerson 8-2866
DENVER 10, COLORADO -	PEarl 3-5547
DETROIT, MICHIGAN -	WOodward 1-7090
FRESNO 14, CALIF. -	AMherst 8-6268
FORT WAYNE, INDIANA -	KEenmore 4874
GRANTS PASS, OREGON -	Electric Motor Shop
HARRISBURG, PA. -	Kingswood 5-9866
HOUSTON 2, TEXAS -	CApitol 7-2354
INDIANAPOLIS 44, INDIANA -	WAlnut 3-8888
LOS ANGELES 58, CALIF. -	LUdlow 3-1781
LOS ANGELES, CALIF. -	RAYmond 3-2717
LOUISVILLE 17, KY. -	MElrose 7-3603
MEMPHIS 6, TENN. -	WHitehall 8-4057
MILWAUKEE, WIS. -	UPtown 3-3000
MISSION, KANSAS -	RAndolph 2-1736
NASHVILLE, TENN. -	AL 6-4906
NEW YORK 17, N. Y. -	YUKon 6-7400
NORFOLK, VIRGINIA -	MAdison 2-6914
OAKLAND, CALIF. -	LOckhaven 9-8994
ORANGEBURG, SO. CAROLINA -	JEfferson 4-1520
PHOENIX, ARIZONA -	Alpine 2-5183
PORTLAND, OREGON -	CApitol 3-6241
PITTSBURGH 22, PA. -	GRant 1-6946
PITTSBURGH 28, PA. -	Fieldbrook 1-2134
QUINCY, MASS. -	MAYflower 9-8400
RICHMOND, VIRGINIA -	Phone: 7-4591
ROCKFORD, ILLINOIS -	Phone: 7-8239
SALT LAKE CITY, UTAH -	ELgin 9-1101
SAN ANTONIO, TEXAS -	CApitol 3-6216
SAN DIEGO 1, CALIF. -	BElmont 3-3981
SEATTLE, WASHINGTON -	ELliot 5960
SOUTH MIAMI, FLORIDA -	MO. 5-7671
DEWITT (SYRACUSE), N. Y. -	Gibson 6-0210
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Now **SIMONDS** Offers You
a Fine Grained, Silicon Killed

LOW CARBON Flat Ground Steel



This new line is in ADDITION to
**SIMONDS FLAT GROUND
DIE STEEL**

*High Grade Alloy Tool Steel
(Oil Hardening — Air Hardening)*



Here's a fine-grained, forging quality, silicon-killed steel that opens up the way to important savings on items like jigs, fixtures, patterns, stripper plates, punch pads, die plates, die-blocking shims . . . and parts that don't require heat treatment or in some instances, just case-hardening.

This new line of low-cost, LOW-CARBON Flat Ground Steel rounds out the present Simonds line of Oil Hardening and Air Hardening Die Steel. What's more, it has equally fine finish . . . and is made to the same close tolerances, with excellent welding quality and machineability.

Simonds LOW-CARBON Flat Ground Steel is furnished in a wide range of flats from $\frac{1}{16}$ " to $1\frac{1}{2}$ " thick and $\frac{1}{2}$ " to 16" wide, and in squares from $\frac{3}{8}$ " to $2\frac{7}{8}$ ". All sizes come in standard, ready-to-use 24" lengths, individually packaged. Stock sizes are ready now . . . special sizes on order. Get full details from your Simonds Distributor today.

TYPICAL CHEMICAL ANALYSIS

C. .18	Mn. .50
Si. .20	Phos. & Sul. .04

Heat Treatment By
Case Hardening Only



SIMONDS
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MICRO SWITCH Precision Switches

What every Purchasing Director should know about MICRO SWITCH



Quality control engineers using comparator to check precise contour and dimension of snap-action switch spring.

A NEW Limit Switch you can replace in SECONDS

MICRO SWITCH introduces the revolutionary new "Plug-in Limit"... an important timesaver for limit switch users. This precision limit switch can be replaced in 20 seconds—with accurate positioning and no need for adjustments. Has variety of actuators to meet requirements. Full details in Bulletin 20. Send for it.



During its life, MICRO SWITCH has produced hundreds of millions of precision switches. Over 10,000 variations are available to meet industry's broad requirements.

High quality with reliability has made MICRO SWITCH the leading manufacturer of precision switches.

MICRO SWITCH's plants and development laboratories are equipped with superlative scientific tools for painstaking precision, quality control and necessary testing techniques.

MICRO SWITCH produces its own snap-action springs, plastic parts and other components of its switches. Very little is purchased from outside sources.

MICRO SWITCH service to its customers is very often above and beyond the service normally required.

For 20 years MICRO SWITCH has been first in the development, design and production of precision switches.

MICRO SWITCH field engineering offices and hundreds of Authorized Distributors blanket the country. There is always a MICRO SWITCH man near you.

Ten catalogs containing full technical data for every series of switches are available to purchasing directors. A request will bring you as many sets as your department requires.

The two words "MICRO SWITCH" are not a generic term. It is the name of a division of Minneapolis-Honeywell Regulator Company.

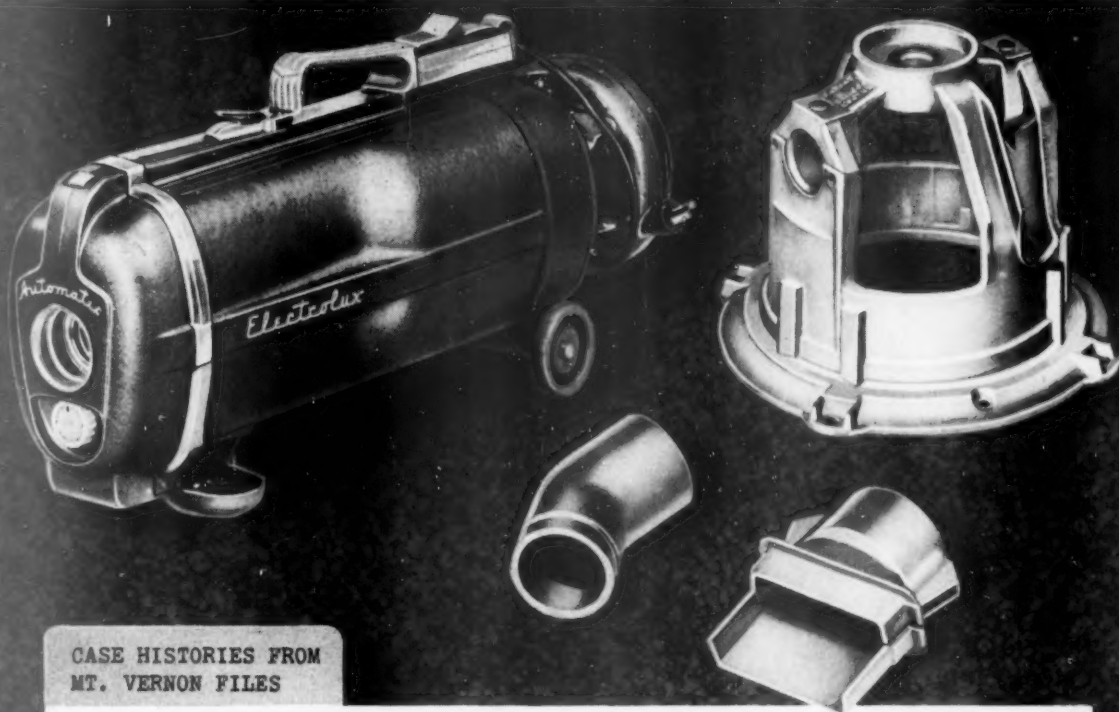
MICRO SWITCH

A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY

In Canada, Leaside, Toronto 17, Ontario • FREEPORT, ILLINOIS



First in Precision Switching



**CASE HISTORIES FROM
MT. VERNON FILES**

"Brain" stops new Electrolux automatically!

The minute this new Automatic Electrolux Cleaner has absorbed so much dirt it can no longer operate at high efficiency, it stops and the cover pops open. Replacing the sealed paper dust bag with a new one sets it up for further operation. It is one of several exclusive Electrolux features which includes 20% greater suction power than any machine the company has ever made. This is due in part to the increased speed and power of its electric motor.

The additional power and the automatic features of this new cleaner were not, however, achieved at the expense of added weight, because it is remarkably light for an appliance of such power and flexibility. By using die castings for the motor frame, elbow and adapter, both weight and manufacturing costs were kept down. As you can see these parts are complex. The motor frame alone, for example, involves apertures of various sizes and shapes, lugs, curved members, straight members, flanges, fillets, vanes and shoulders all combined into a very lightweight yet extremely rigid, strong unit. The other parts, although smaller, are also "toughies". But die casting is the most economical method of producing these intricate parts which combine strength

with light weight and holding to such close tolerances that little or no machining is required to finish them.

Mt. Vernon can help you make the most of these and other die casting advantages by a complete four-fold service of: (a) consultation—to help with design and production problems; (b) die making—on modern tool and die equipment handled by skilled personnel; (c) castings—aluminum and zinc, guaranteed "on grade" at all times; (d) machining facilities—for handling any machining operations your castings may require. As in the case of Electrolux, a switch to die castings may profit you tremendously. Let's talk it over.



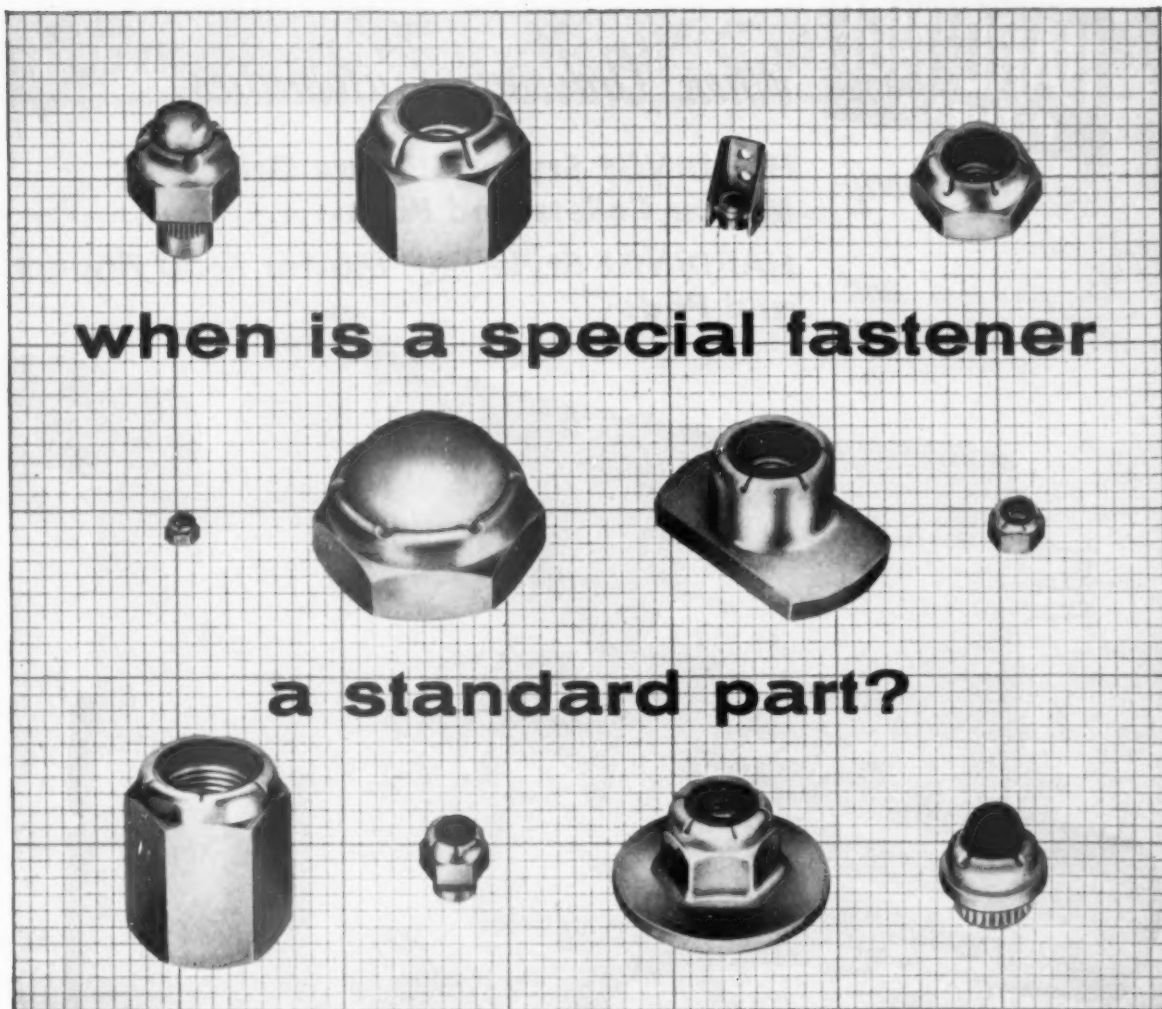
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For More Information Write No. 185 on Inquiry Card—Page 32



The answer is easy: when it's an ELASTIC STOP® nut. ESNA makes and stocks more types, shapes and sizes (in a larger variety of materials and finishes) than any other lock nut manufacturer. In fact, all of the nuts shown here are standard production parts.

Every one of these fasteners is self-locking anywhere on the bolt, will remain tight under severe vibration . . . yet they can be dis-assembled and re-used many times. What's more, the performance of the red

locking insert has proved itself in critical applications on American heavy industrial equipment for more than twenty-five years.

All ESNA nuts are carefully controlled in manufacture as to finished dimensions, class of thread fit and finish. This control pays off—in uniform quality every time you order.

Simplify and speed up your purchases by sending for a free catalog on ESNA's extensive line.

ELASTIC STOP NUT CORPORATION OF AMERICA



----- Clip Coupon for Complete Catalog -----

Elastic Stop Nut Corporation of America
Dept. N26-215, 2330 Vauxhall Road, Union, N. J.

Gentlemen: Please send me your free, complete ELASTIC STOP nut catalog.

Name _____ Title _____

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ELMIRA, N.Y.

When Ordering Automatics

Specify

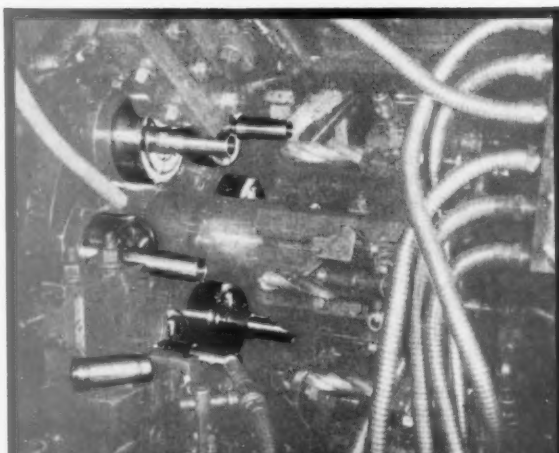
**HARDINGE Style "S" Sure-Grip
Master Collets and Pads**

and

**HARDINGE Style "B" Master Feed Fingers
and Pads**



Photo of Model 601 New Britain Automatic
courtesy New Britain-Grindley Machine Division.



Your automatics perform best with HARDINGE Master Feed Fingers and Master Collets. The name HARDINGE is your guarantee of accuracy and durability . . . allows you to reap the full benefit of the inherent accuracy of your machines.

HARDINGE Master Collets are **the only masters with no work pressure on the screw . . .** last longer . . . retain accuracy.

HARDINGE Master Feed Fingers and Pads save 30% to 80% over conventional solid feed fingers.

All sizes for all automatics.

Prompt Delivery from these Stock Locations: Atlanta, Boston, Chicago, Dayton, Detroit, Elmira, Hartford, Los Angeles, Minneapolis, New York, Oakland, Philadelphia, St. Louis, Toronto, Montreal.

HARDINGE BROTHERS, INC., ELMIRA, N. Y.
"PERFORMANCE HAS ESTABLISHED LEADERSHIP FOR HARDINGE"

Information For Your Catalog Files

ADHESIVES, SEALANTS, COATINGS

A 12-page catalog lists adhesives, sealants, paints and coatings according to Government specifications. The company's products numbers are correlated to specifications and product title.

Magic Chemical Co.

Write No. 1 on Inquiry Card—Page 32

BOXES (PLASTIC)

An assortment of rigid plastic boxes for packaging a wide variety of products is covered in a 16-page, 3-color catalog. Dimensions, illustrations and prices of all are supplied.

Bradley Associates, Inc.

Write No. 2 on Inquiry Card—Page 32

CASTINGS (STEEL)

The 1958 edition of "Fundamentals of Steel Casting Design" is supplemented with data derived from recent S.F.S.A. research work. The booklet has been meticulously revised.

Steel Founders' Society of America

Write No. 3 on Inquiry Card—Page 32

CERAMIC THROW-AWAY INSERTS

V-R Bulletin No. 5710 discusses triangular and square throw-away inserts for negative rake tool-holders. Made of Ceramic VR-97, an aluminum oxide material, they permit speeds of 2000 SFPM.

Vascoloy-Ramet Corp.

Write No. 4 on Inquiry Card—Page 32

CLOTHES (WORK)

The latest advances in acid-resistant and lint-free industrial apparel are described and illustrated in a catalog. Garments in 100% Orlon, Dynel and blends of Orlon and Dacron are covered.

Worklon, Inc.

Write No. 5 on Inquiry Card—Page 32

COMPARATORS (THREAD)

Catalog TC-1 describes in 12 pages a variety of precision thread comparators of both external and internal types. They gage all thread forms and classes from diameters as small as No. 0.

Hanson-Whitney Co.

Write No. 6 on Inquiry Card—Page 32

CONVEYOR SYSTEMS

Step by step hints on the selection, installation and operation of conveyors are contained in Bulletin No. 500 (20 pages). A question and answer check list permits plotting of a conveyor line.

The Oliver Corp.

Write No. 7 on Inquiry Card—Page 32

CONTROLS

All types of industrial controls are treated in a 2-color, 46-page catalog. Specifications are given for diaphragm, hydramotor and magnetic valves; also for air and gas regulators.

General Controls

Write No. 8 on Inquiry Card—Page 32

COPPER, COPPER ALLOYS

Corrosion resistance of copper and copper alloys is discussed in a 32-page reference booklet, B-36 R. It enables proper selection of the copper alloy best suited for a specific use.

The Anaconda Co.

Write No. 9 on Inquiry Card—Page 32

DRILL, REAMERS, END MILLS

Catalog No. 58, multi-colored, devotes 100 pages to giving sizes and dimensions of a full line of general purpose drills, reamers and end mills. Another catalog discusses carbide units.

Greenfield Tap & Die Corp.

Write No. 10 on Inquiry Card—Page 32

DRIVES

Packaged drives for equipment requiring adjustable speed or speed synchronization are covered in Bulletin No. 20,000 (8 pp). The drives offer less expensive installation.

Clark Controller Co.

Write No. 11 on Inquiry Card—Page 32

DROP FORGED FITTINGS

All questions concerning drop forged fittings for wire rope and chain are answered in Catalog No. 950-2. It includes specifications, dimensions, rated capacities and weights.

American Hoist & Derrick Co.

Write No. 12 on Inquiry Card—Page 32

Information For Your Catalog Files

DYNEL FIBER

A 16-page illustrated booklet, "The Story of Dynel," includes information on how the fiber is made, its properties, use and care in industrial fabrics. Performance is emphasized.

Union Carbide Corp.

Write No. 13 on Inquiry Card—Page 32

ELECTRICAL INSULATING MATERIALS

Repair and maintenance shops will find Catalog 23 an excellent reference volume. It contains full descriptions, photos, prices and ordering data for a line of electrical insulating materials.

Insulation Mfrs. Corp.

Write No. 14 on Inquiry Card—Page 32

FANS

A line of high temperature heat fans, "Dura-Temp" are described and illustrated in Bulletin HF 100. Capacities run from 600 to 30,000 cfm and temperatures handled range up to 1650 F.

General Blower Co.

Write No. 15 on Inquiry Card—Page 32

FASTENERS

The 12-page, 8½ x 11, illustrated 2-color catalog (Form 8-415) describes a line of fasteners, blind rivets and driving tools for the aircraft industry. Also included are descriptions of power tools.

Huck Mfg. Co.

Write No. 16 on Inquiry Card—Page 32

FASTENERS

A 42-page, fully illustrated catalog contains complete design and purchasing information on rivets and riveting machines. A questionnaire helps determine which type fastener to use.

Judson L. Thomson Mfg. Co.

Write No. 17 on Inquiry Card—Page 32

FORK TRUCKS

Tips on operating fork lift trucks more safely are contained in an 8-page, 2-color brochure. It is illustrated with cartoon type drawings. Booklet serves as a fork truck driver training manual.

Lewis-Shepard Products, Inc.

Write No. 18 on Inquiry Card—Page 32

GEARING

The 2-color bulletin, No. 700-C, contains details on an extensive line of worm gearing, supplied in individually matched sets. They provide high load-carrying capacity on small center distances.

Cone Drive Gears

Write No. 19 on Inquiry Card—Page 32

GRINDERS

A 6-page bulletin (PG-257) tells how grinding departments can increase diamond wheel life from 20% to 30%, get from 30% to 50% more tool grinds per hour and obtain better finishes.

Wesson Co.

Write No. 20 on Inquiry Card—Page 32

HYDRAULICS, LUBRICATION SYSTEM

Profusely illustrated, a 20-page, 2-color manual supplies instructions for general hydraulics and lubrication systems for automated machine tools. Lubricants are discussed.

Snyder Tool & Engineering Co.

Write No. 21 on Inquiry Card—Page 32

LEVELS

A full line of level instrumentation and systems is covered in a 16-page booklet. It discusses applications of capacitance devices in quantitative control of granular solids, liquids and powders.

Robertshaw-Fulton Controls Co.

Write No. 22 on Inquiry Card—Page 32

MAGNETS

A booklet, "Applied Magnetics," presents pictorially 24 basic designs for holding magnets which can be used to derive holding assemblies with any required pull force.

The Indiana Steel Products Co.

Write No. 23 on Inquiry Card—Page 32

MICROHONING

An illustrated 32-page service and equipment catalog discusses Microhoning, a stock-removal method of abrading. Data is supplied on machines, tools, fixtures, abrasives and coolants.

Micromatic Hone Corp.

Write No. 24 on Inquiry Card—Page 32

YOUNGSTOWN QUALITY PAVES THE WAY



*Producers of Quality
Carbon and Alloy Steels
for over Half-a-Century*

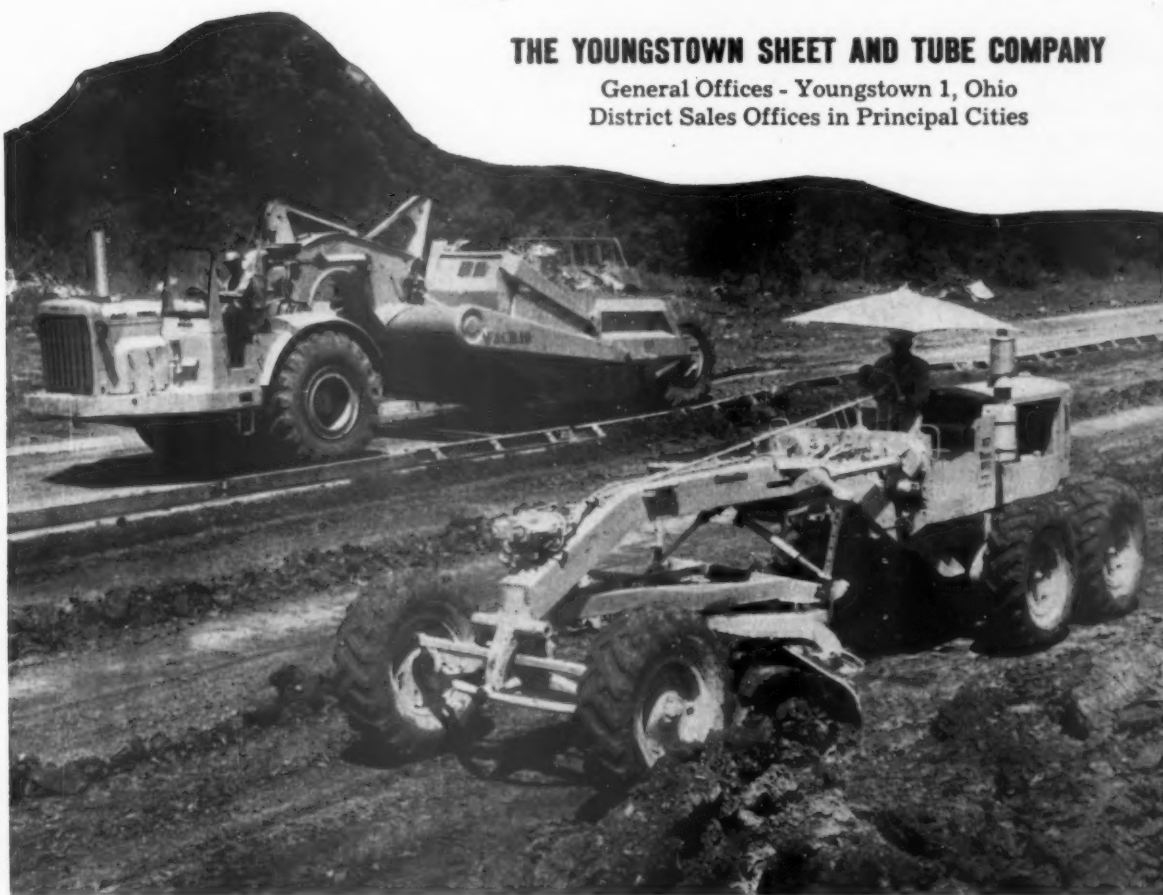
The Motor Grader and Tractor-Scraper—shown working on the site of Houston's multi-million-dollar "Shopping City of Gulf-gate", are designed for rugged service requiring tough strong steel construction.

Caterpillar Tractor Co. uses Youngstown quality steels in the construction of these powerful machines. Youngstown Alloy Steel for the gears of the steering and driving mechanisms help to provide durable, trouble free mechanical operations. Yolo "M" Steel Plates, one of the Yolo family of high strength steels, are used for structural strength, resistance to shock and abrasion and also for ease in forming and welding the many intricate parts in this type of fabrication.

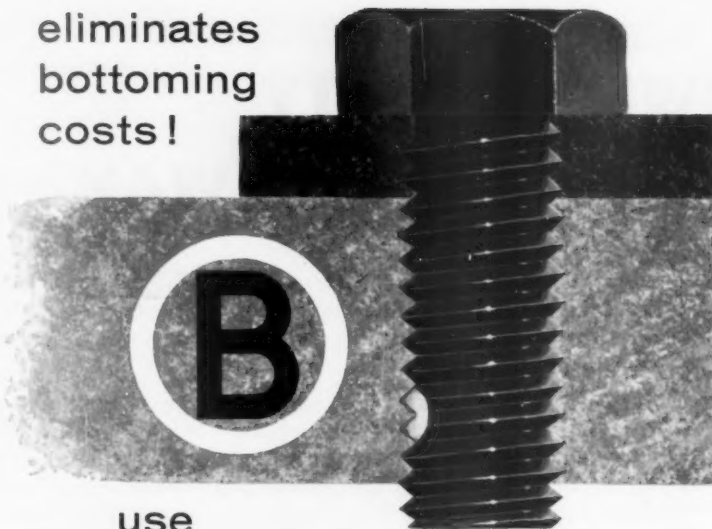
Youngstown's Alloy and Yolo Steels are produced in a variety of forms and qualities to meet your particular specifications. Our Service Engineers are available upon request to discuss your Alloy and High Strength steel problems—why not call them today.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

General Offices - Youngstown 1, Ohio
District Sales Offices in Principal Cities



eliminates
bottoming
costs!



use
NYLOK® fasteners

Now you can cut the cost of special set-ups, drill breakage, precision bottoming, tapping, and chip removal simply through the use of **® NYLOK®** fasteners.

The illustration shows how the resilient Nylon pellet wedges load and non-load bearing threads tightly together in a stronger, leak-proof joint. In actual applications, drilling and tapping costs are cut drastically with still further savings realized through reduced production and assembly time.

® NYLOK® Fasteners Seal As They Lock...without sealants

® NYLOK® fasteners seal gas, oil, air and alcohol. Stay locked at any depth—need not be fully seated—don't vibrate loose. Yet, they can be removed and reused. Nylon insert is adaptable to any **®** threaded fastener. Won't shrink, dry, age or turn brittle. Unaffected by temperatures to 250°F...cannot damage threads or seating surfaces. Simplifies fast assembly. Perfect for hopper feed and power driving.



Compare the features of NYLOK with those of other fasteners. Write for literature detailing advantages. Many other advantages of **® NYLOK** fasteners are being realized in a variety of applications. It will pay you to get the facts.

© "THE NYLOK CORPORATION"

BUFFALO BOLT COMPANY

Division of Buffalo-Eclipse Corporation, **NORTH TONAWANDA, N. Y.**

• 3 convenient service centers

WESTERN OFFICE
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JACKson 2400 (Buffalo)

**SELF-LOCKING
SELF-SEALING**



NYLOK® fasteners

For More Information Write No. 189 on Inquiry Card—Page 32

Catalog Files

PACKAGING

Packaging cost reduction — from original package design to final product shipment — is the subject of a vest pocket booklet, titled "How to Ship More Economically in Corrugated Boxes."

Hinde & Dauch

Write No. 25 on Inquiry Card—Page 32

PRESSES

Bulletin AFP-101 covers a full line of high-speed precision "Flexopresses," both C type and straight side. It includes data on C type from 15 to 75 ton and on straight side from 75 to 200 ton.

The Precision Welder & Flexopress Co.

Write No. 26 on Inquiry Card—Page 32

TRANSFER MACHINES

Line and rotary transfer machines and special production machines are illustrated and described in a 12-page, 2-color booklet. Included is an automatic line machine performing 3 types of jobs.

The Producto Machine Co.

Write No. 27 on Inquiry Card—Page 32

TRANSFORMERS

Some of the research facilities for producing a wide line of transformers along with their design and construction features are covered in a 19-page, illustrated bulletin.

Allis-Chalmers

Write No. 28 on Inquiry Card—Page 32

WELDING

Catalog No. 160 covers applications of oxyacetylene welding and cutting torches, air-acetylene torches, machine cutting torches, welding and industrial regulators, adaptors, etc.

Modern Engineering Co.

Write No. 29 on Inquiry Card—Page 32

*There IS
a Big Difference
in Saw Blade*

Try DoALL CLAW-TOOTH on Your Next Job!

How the CLAW-TOOTH blade
reduces contour
or cut-off *sawing costs* . . .

CUTS ALL MATERIALS—Steel, titanium, brass, iron, asbestos, plastics, wood, rubber and many other metals and non-metals.

EXTRA FAST CUTTING—The claw-like, positive rake angle teeth literally "pull themselves" into the work—providing more penetrating power and smoother chip flow.

EXTRA LONG LIFE—Made sharp to stay sharp—scientifically designed tooth and gullet shape gives you longer blade life. Teeth are securely anchored to the flexible back to take heavy cutting loads without breakage.

EXTRA EASY CUTTING—Its "bite-in" cutting efficiency requires less feed pressure, resulting in more output with less work per operator.

ACCURACY OF SET $\pm .002$ "—Only DoALL guarantees this set accuracy. It means you get straight, accurate cutting of virtually any material . . . freedom from binding . . . ability to produce a predetermined kerf size and surface finish.

CLEAN, BURRLESS CUTTING—Means less finishing and grinding costs.

GUARANTEED UNCONDITIONALLY—to be completely free of defects in material, workmanship, heat treating and packaging.

Convenient "strip-out" Containers —



100' or 500' coils in exclusive DoALL "strip-out" boxes for convenience, safety and blade protection.

Custom Welded Lengths —



to fit any band sawing machine. Individual packages or cartons of six packaged blades.

**POSITIVE
RAKE ANGLE**

**"Pulls"
blade
into work**

DoALL "claw" teeth are self-penetrating. They pull themselves into the work for easier, faster sawing. This "hooked" tooth design makes CLAW-TOOTH the most universal saw blade ever developed.

Available in CARBON or HIGH-SPEED STEEL
They'll saw faster on any machine!

There's a DoALL saw band for every machine and job . . . but the blade that handles *more jobs better* is the CLAW-TOOTH! For cut-off jobs or contour sawing, the versatile CLAW-TOOTH blade can reduce both your sawing costs and blade inventory.

Available in $\frac{1}{4}$ " to 1" blade width—2, 3, 4, and 6-pitch. For lowest cost per square inch of cutting, specify DoALL CLAW-TOOTH. Or, if you have a special sawing problem, ask about DoALL's free blade selection service—complete recommendations will be furnished for your job.

Call DoALL locally for details, or send for FREE catalog listing complete line of DoALL band tools.

SB-58



THE DoALL COMPANY, Des Plaines, Illinois

Call Your DoALL Service-Store



THIS IS A
TYPICAL DoALL STORE



Machines and Blades



Surface Grinders



Power Saws



SAW BANDS



MEASURING INSTRUMENTS



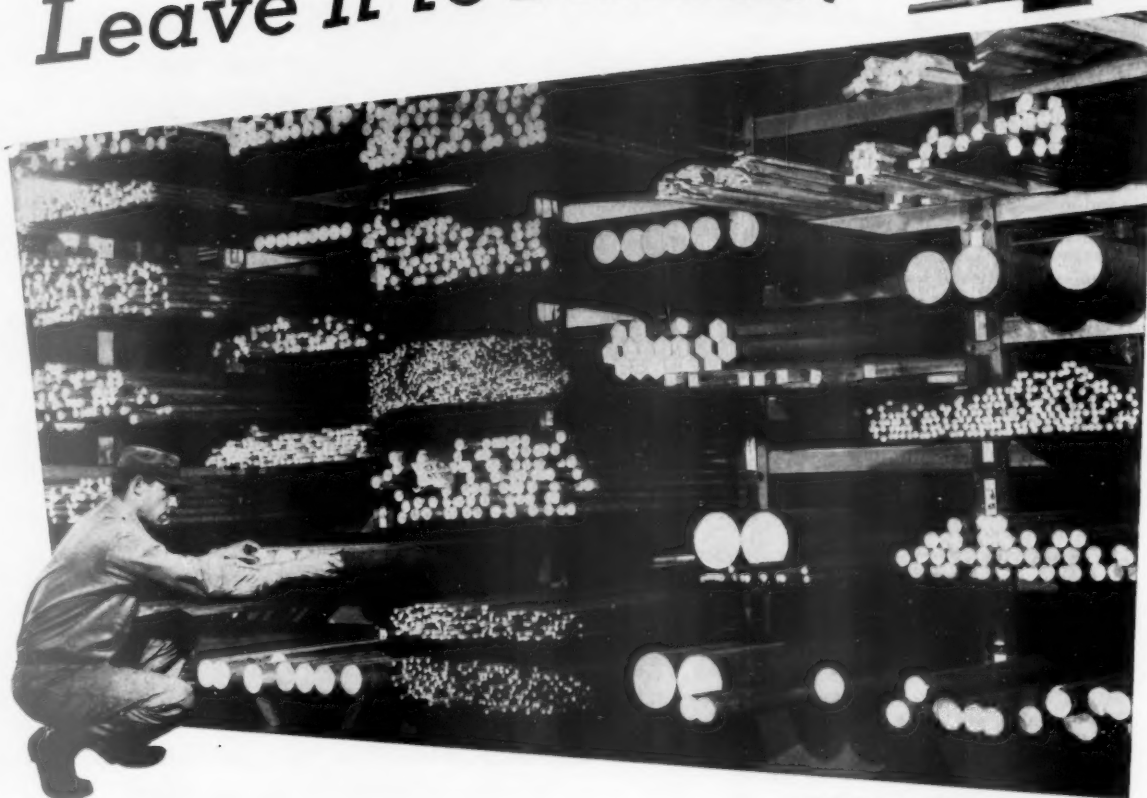
SHOP SUPPLIES



IN STOCK

For More Information Write No. 190 on Inquiry Card—Page 32

Carbon and Alloy Steels? Leave it to **FRASSE!**



There's a wide selection of carbon and alloy steels to choose from when you work from Frasse stocks! You'll find a complete size range of carbon bars and shafting—as well as commercial and aircraft quality alloys... ready for immediate delivery to your plant.

In all, you can pick from 20 different grades—any one of 2001 sizes. Frasse has a size and grade suitable for any application... and steel specialists who can assist you with grade selection and methods of fabrication.

You get... broad selection, speedy availability, practical engineering collaboration. Add them up—and it's *Frasse for carbon and alloy steels*. Check the grade listings shown—place your next order with Frasse. It's a practice you'll find convenient—and far more economical than maintaining your own inventory.

Peter A.



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Cold Finished

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ALLOY STEEL BARS

Cold Drawn and Hot Rolled

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4140 • 4142 • E4340 • E8740
4140 H. T. • 4142 H. T.



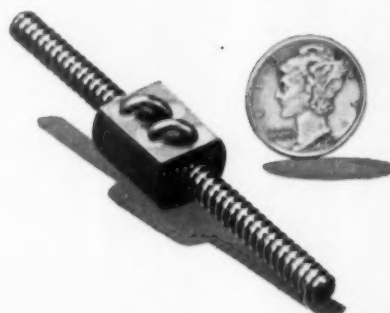
PLUS...

Precision Shafting
Special Finish

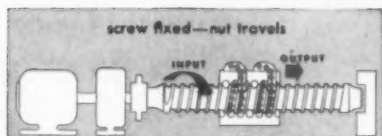
Turned & Polished Shafting • Drill Rod
4130 Aircraft Quality Sheets

Here's your new ANSWER

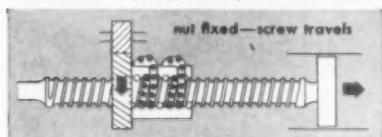
PHOTOGRAPHED ACTUAL SIZE
BALL CIRCLE DIAMETER: $\frac{3}{16}$ inch.



WORLD'S SMALLEST ball/bearing SCREW SOLVES CRITICAL MINIATURE POSITIONING/CONTROL PROBLEMS



NUT TRAVELS: When rotary motion is applied to the screw, the b/b nut glides along the axis of the screw on rolling steel balls, converting rotary force and motion to linear force and motion with 4/5 less torque than acme screws.



SCREW TRAVELS: When rotary motion is applied to the b/b nut, the screw glides along its longitudinal axis on rolling steel balls, converting rotary force and motion to linear force and motion with unprecedented efficiency.

An unprecedented achievement in minimum size and weight—maximum efficiency, dependability and service life for ultra-precise controls.

It's another first from Saginaw—and the possibilities it opens up for improved electrical and electronic controls are limited only by your imagination! Radar tuners, missile and rocket guidance and telemetering systems, automatic switch-gear, electronic machinery controls are just a few of the applications where this new miniature Saginaw b/b Screw will solve critical positioning/control problems. It's so compact and light, you can save substantially on space and weight. It's so efficient, (over 90%) you can use much

smaller motors and gear boxes. It's so precise, you can position components within .00005 inch per inch of travel. It's so dependable, you can rely on remarkably long service life even in adverse environments.

You will find our 1958 Engineering Data Book extremely helpful in planning applications, or experienced Saginaw engineers will gladly make specific recommendations without obligation. Just phone, write or mail the handy coupon.



SAGINAW STEERING GEAR DIVISION OF GENERAL MOTORS • SAGINAW, MICHIGAN
WORLD'S LARGEST PRODUCER OF BALL BEARING SCREWS AND SPLINES

SEND TODAY FOR FREE 36-PAGE
ENGINEERING DATA BOOK . . .

or see our section in Sweet's Product Design File

Saginaw Steering Gear Division
General Motors Corporation
b/b Screw and Spline Operation
Dept. 7P, Saginaw, Michigan
Please send new engineering data book on Saginaw b/b Screws and Splines to:

NAME _____
COMPANY _____ TITLE _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____



MORE STRIKING POWER!

C/R Soft Hammers

C/R Jawhead Hammers are the best "soft" hammers you can buy. They speed work, reduce fatigue and increase safety — and never mark or spoil finished work. Oversize solid hickory handles are longer, stronger with heads locked on for life. They'll actually save you money in better work and longer life.

C/R RAWHIDE FACES: made of specially processed water buffalo rawhide compressed to size under hydraulic pressure. No other known material will transmit greater striking power.



NEW! NYLON FACES: for all C/R Hammers, interchangeable with rawhide faces. Unusually resistant to heat, oils, moisture and most acids.



Changes faces in seconds!



Buy C/R Jawhead Hammers from your local industrial supplier — or write for this illustrated brochure.



HAMMER

DIVISION

CHICAGO RAWHIDE MANUFACTURING COMPANY
1239 Elston Avenue • Chicago 22, Illinois

In Canada: Distributed by Chicago Rawhide Mfg. Co. of Canada, Ltd., Hamilton, Ont.
Export Sales: Geon International Corp., Great Neck, New York

**CHICAGO
RAWHIDE**

Suppliers in the News

C. (Gard) Coughlen has joined the sales force of the Manufacturing Division of **Precision Steel**



C. Coughlen

Warehouse, Inc., Downers Grove, Illinois. Mr. Coughlin will service industrial supply houses in Ohio and Michigan.

Link-Belt Company, Chicago, Illinois, has opened a new district sales office in a new office building at 2025 Canal Street, New Or-



Warren K. Guy

leans, Louisiana. Warran K. Guy has been named district manager. R. J. Tricon Company, company industrial distributor in the New Orleans territory for many years, will continue to maintain large stocks of company products to serve industry in the area.

John F. Kerrigan, Hamden, Connecticut, has been appointed sales representative for **The Standard Transformer Company, Warren, Ohio.** He will handle the company's complete line of transformers in Connecticut.

The appointment of Donald Ahrens as sales manager of **Paasche Airbrush Company,** a division of **Cline Electric Manu-**



Donald Ahrens

facturing Company, Chicago, has been announced. Mr. Ahrens started with the parent organization in 1951 as administrative assistant in the war products division. He came to Paasche as a field service trouble shooter in 1955 and soon became manager of the Chicago sales force.

The Radio Receptor Co., Inc., subsidiary of General Instrument Corp., Brooklyn, New York, has selected Donert Associates, New York City, as sales representative to radio, television and phonograph original equipment manufacturers for its selenium rectifiers and germanium and silicon diodes in the New York metropolitan area. Kahgan Sales Co. will continue to represent the company products in the industrial power trade.

Baldwin-Lima-Hamilton Corporation, Philadelphia, Pennsylvania, has named Ralph N. Conner southwestern district man-



Ralph N. Conner

ager. Formerly assistant manager of this district, supervising sales in southern California and the entire states of Arizona, New Mexico and Colorado, Mr. Conner has been with the corporation for 18 years.

Dewey H. Nelson has been promoted to assistant manager of the Becco Chemical Division, **Food Machinery and Chemical Corpora-**



Dewey H. Nelson

tion, Buffalo, New York. Mr. Nelson will continue in the capacity of sales manager, a position he has held since November, 1956.

Suppliers in the News

Eugene G. Sheasby has been appointed general manager of sales of **Bliss & Laughlin, Inc., Harvey, Illinois**. Mr. Sheasby has 13 years



Eugene G. Sheasby

of varied steel industry experience with U. S. Steel Supply Company, Chicago and Pittsburgh, and most recently as vice president and general manager of sales of the Fort Duquesne Steel Company in Pittsburgh.

Remy J. Allemann has been transferred to the **World Bestos Division of Firestone Tire and Rubber Company, New Castle,**



Remy J. Allemann

Indiana. In his new position as sales engineer in the original equipment field, Mr. Allemann will work directly with manufacturers and handle the sales of

the division's vibration dampers and snubbers, molded friction components, special clutch facings and other industrial friction materials.

Pratt & Whitney Company, Inc., West Hartford, Connecticut, has named Clinton E. Smith administrative sales manager for the company's machinery, cutting



Clinton E. Smith

tool and gage divisions. It is a newly established executive post to coordinate the administration of the company's expanded sales organization that now includes 21 branch offices in principal cities. At the same time the company also announced a major revision of sales territories for the divisions. William C. Mullin has been placed in charge of instrument gages and automation gaging systems in the East-West territory, which includes company branch offices in Boston, Rochester, Buffalo, Syracuse, New York, Philadelphia, Pittsburgh, Charlotte, Jupiter, Houston, Dallas, Los Angeles and San Francisco. Albert F. Miller, Jr. will manage cutting tool and conventional gage sales in this same territory. Both will make their headquarters in Hartford. Alford H. Johnson, located in the company's Chicago office, will manage all gage and cutting tool sales in the mid-continent sales territory. He

will coordinate the sales activities of branch offices located in Chicago, Milwaukee, Detroit, Cleveland, St. Louis and Birmingham.

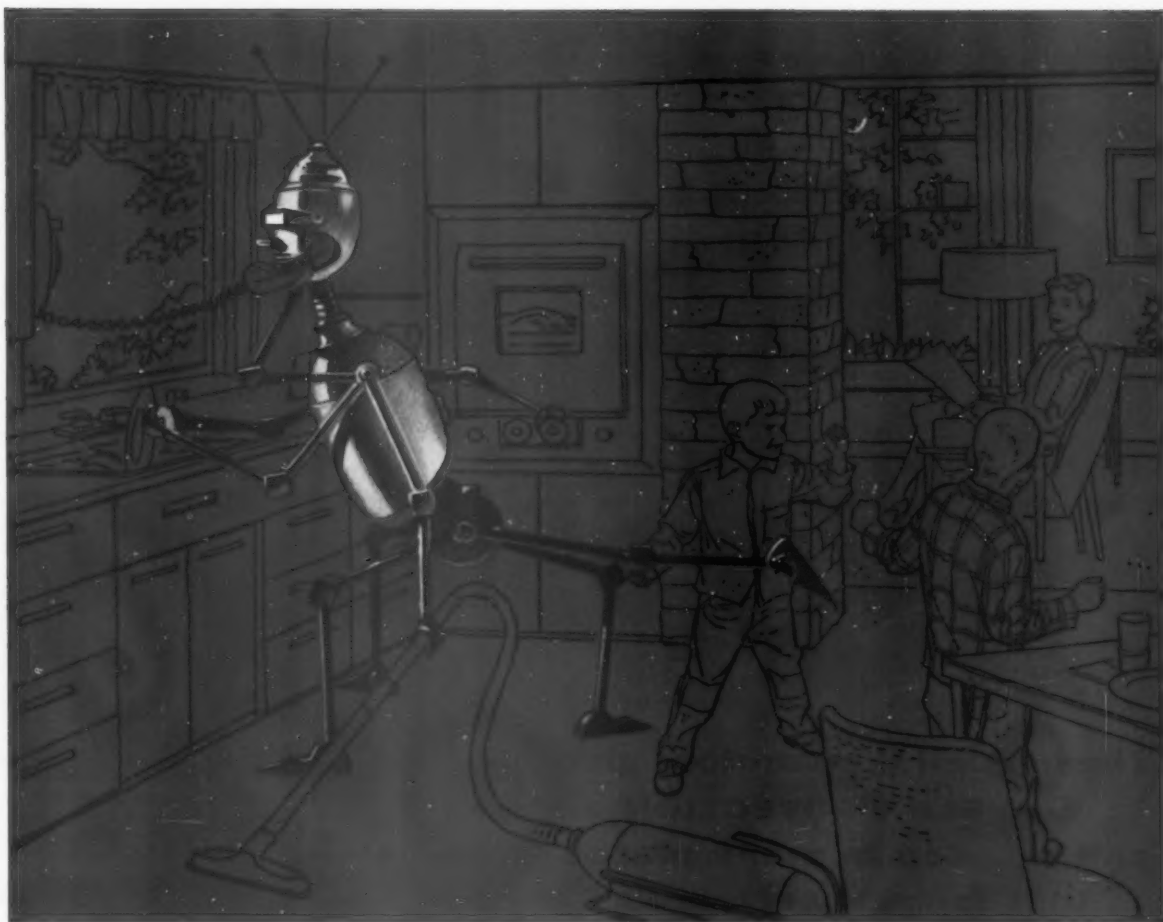
Jefferson Chemical Company, Inc., New York, has appointed J. R. Carlson to the newly created position of sales manager. At the same time announcement was made of the appointment of P. R. Monaghan as regional manager of the Eastern region. All regional managers and the manager of the company's Alkali sales division will report to Mr. Carlson. He will be located at the company's headquarters in Houston, Texas. Mr. Monaghan will be located in New York City.

Elmer W. Ellsworth has been named sales manager of Stanley Electric Tools division of **The Stanley Works, New Britain,**



E. W. Ellsworth

Conn. He succeeds Fred O. Fuller who has retired. Mr. Ellsworth joined the division in 1929 and later was assigned to the New England, New York territory. From 1943 until the end of World War II he was manager of priorities for the electric tools division and returned to the home office again in 1947 as assistant to the sales manager of the division. He became assistant sales manager in 1950.



No matter what you make from Cold Rolled Steel **An ALAN WOOD Representative can help!**

If you produce this gadget . . . housewives will love you. Your market would be endless. But there would be problems about the kind of steel to use. Better call your A.W. Representative. Your A.W. Representative may order a metallurgical study of your problems and bring about savings that build new profits and increased pro-

duction. He can provide you with the latest information on cold rolled steel and its application, plus experienced advice on the gauge, size and type to order. Call him today. Your A.W. Representative is always available . . . never out of touch with your location.

ALAN WOOD STEEL COMPANY

steelmasters for more than a century and a quarter • CONSHOHOCKEN, PA.

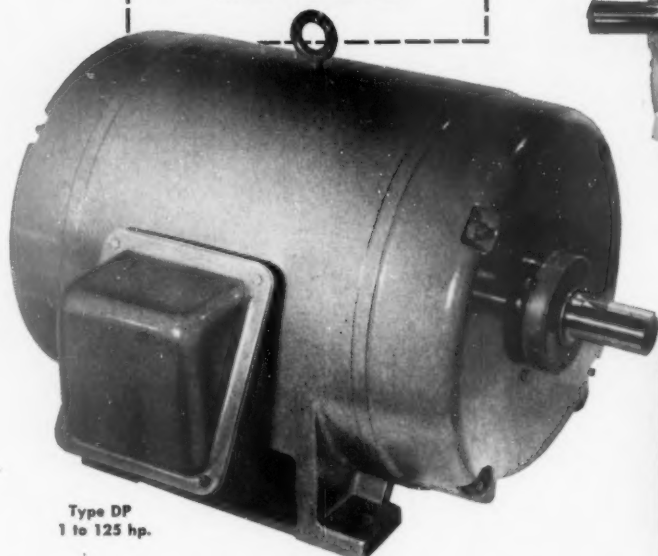
DISTRICT OFFICES AND REPRESENTATIVES: Philadelphia
New York • Los Angeles • Atlanta • Boston • Buffalo • Cincinnati
Cleveland • Detroit • Houston • Pittsburgh • Richmond • St. Paul
San Francisco • Seattle

Montreal and Toronto, Canada—A. C. Leslie & Co., Limited

IRON PRODUCTS "Swede" pig iron	A.W. CUT NAILS Standard & Hardened
STEEL PRODUCTS Plates (sheared) A.W. Dynalloy (high strength steel) Hot rolled sheets Hot rolled strip Cold rolled sheets Cold rolled strip	MINE PRODUCTS Iron ore concentrates Iron powder Crushed stone Sand
ROLLED STEEL FLOOR PLATE A.W. ALGRIP abrasive A.W. SUPER- DIAMOND pattern COAL CHEMICALS	COKE Foundry, industrial & metallurgical PENCO METAL PRODUCTS DIVISION Steel cabinets, lockers & shelving



**WAGNER
POLYPHASE
MOTORS**



Type DP
1 to 125 hp.

**These open type motors give
DOUBLE PROTECTION...
can be used in many places
that formerly required
splashproof motors**

Wagner Type DP Motors offer the *double protection* of rugged corrosion-resistant cast iron frames and drip-proof enclosures so well designed that the DP Motor can handle many applications that formerly required splashproof motors.

These Wagner Motors are built in the new NEMA ratings that pack more power into less space, are lighter in weight and are easier to maintain—only occasional lubrication is required.

SLEEVE BEARING MODELS AVAILABLE

The entire line of ratings through 125 hp. is available with steel-backed, babbitt lined sleeve bearings that have high carrying capacity and provide quieter operation.

Let a Wagner Sales Engineer show you how these motors can be applied to your needs. Call the nearest branch office or write for Wagner Bulletin MU-223.

1 to 125 HP—1750 RPM—40°C NEMA FRAMES 182 through 445U

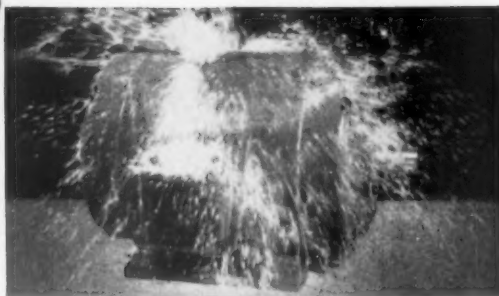
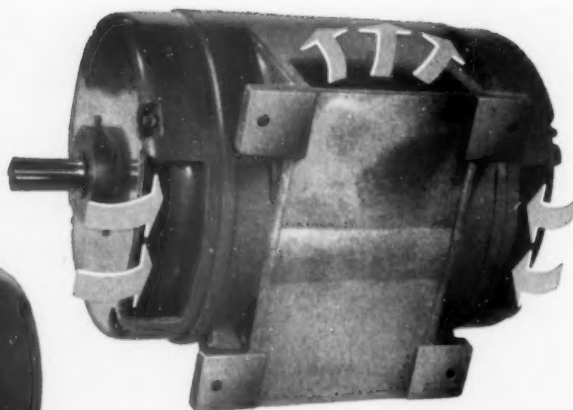
Wagner Electric Corporation

6360 Plymouth Ave., St. Louis 14, Mo., U.S.A.

WM58-A

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

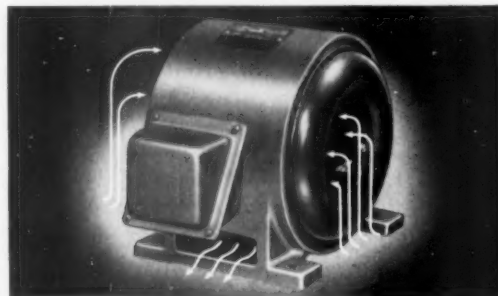
For More Information Write No. 195 on Inquiry Card—Page 32



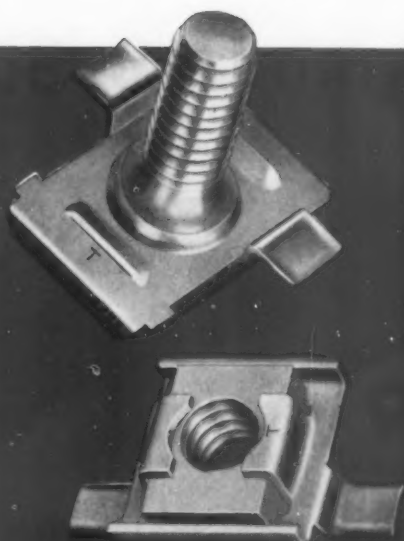
DOUBLY PROTECTED — Wagner DP Motors offer the *double protection* of completely drip-proof enclosures and rugged cast iron frames that can take rough handling and resist corrosion.



CAN BE RELUBRICATED — These motors can be re-greased when desired for longer bearing life. Fresh grease can be added—old grease removed—through openings provided in the ball bearing housing.



COOL RUNNING — Specially designed baffles direct cooling air through the motor to protect the stator windings. Blowers, cast as part of the rotor, move large volumes of air without noise or vibration.



TIP INTO
PANEL HOLE



LOCK INTO
POSITION

Blind assembly costs cut in half with **SPEED GRIP®** Bolt and Nut Retainers

A tip-in . . . a sidewise pull . . . and this new front-mounting SPEED GRIP Bolt and Nut Retainer is locked in the panel without special tools or skills.

The exclusive SPEED GRIP locking feature provides enough lateral drift to compensate for normal production misalignment of the parts to be fastened together.

Blind-panel assemblies no longer require awkward, time-consuming acrobatics for fastening. The problems caused by damaged threads in welded, staked, or clinched fasteners are eliminated. SPEED GRIPS can be slipped into place anywhere on the production line.

These convenient, time-saving SPEED GRIPS are available to fasten a wide range of unit sizes and bolt diameters to a variety of panel thicknesses. Ask your Tinnerman representative for samples and engineering data. All major telephone directories list your closest Tinnerman Sales Engineer. Or write to

TINNERMAN PRODUCTS, INC.
P.O. Box 6688 • Dept. 12 • Cleveland 1, Ohio

TINNERMAN

Speed Nuts®



FASTEST THING IN FASTENINGS®

When you buy from U. S. Steel



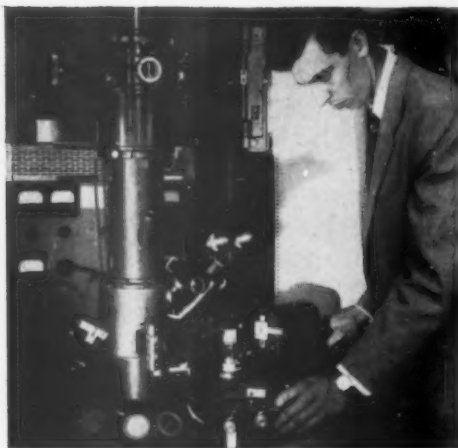
STEEL + PLUS IN ACTION: FACILITIES

The purest commercial steel obtainable is in these parts for a 100", double-focus, mass spectrometer magnet. We made the steel, poured it in one huge ingot, formed it and machined it. Both parts were machined flat and parallel with less than a .001"

variation. The ends are within .002" of a true square. The surfaces were polished to a 30-micro-inch finish! It took complete steel-making facilities to meet these "almost impossible" specifications required by the Argonne National Laboratory.

American Bridge • American Steel & Wire and Cyclone Fence • Columbia-Geneva Steel • Consolidated Western Steel • National Tube
Oil Well Supply • Tennessee Coal & Iron • United States Steel Homes • United States Steel Products • United States Steel Supply
United States Steel Export Company • Universal Atlas Cement Company

you get **STEEL+PLUS**



STEEL+PLUS IN ACTION: RESEARCH

The head of a pin would appear about 47 feet in diameter if examined under this instrument. It's an X-ray probe micro-analyzer now in use at U. S. Steel's Fundamental Research Laboratory at Monroeville, Pa. U. S. Steel's Research teams use it to study the microstructure and behavior of steels for today's and tomorrow's special uses.



STEEL+PLUS IN ACTION: MARKETING ASSISTANCE

"Practical Dreamer" is the title of U. S. Steel's technicolor movie promoting steel products for modern kitchens. It will be seen by thousands of kitchen-planners at theaters, clubs, and on TV. Result: Increased demand for the kitchen products made by our customers.



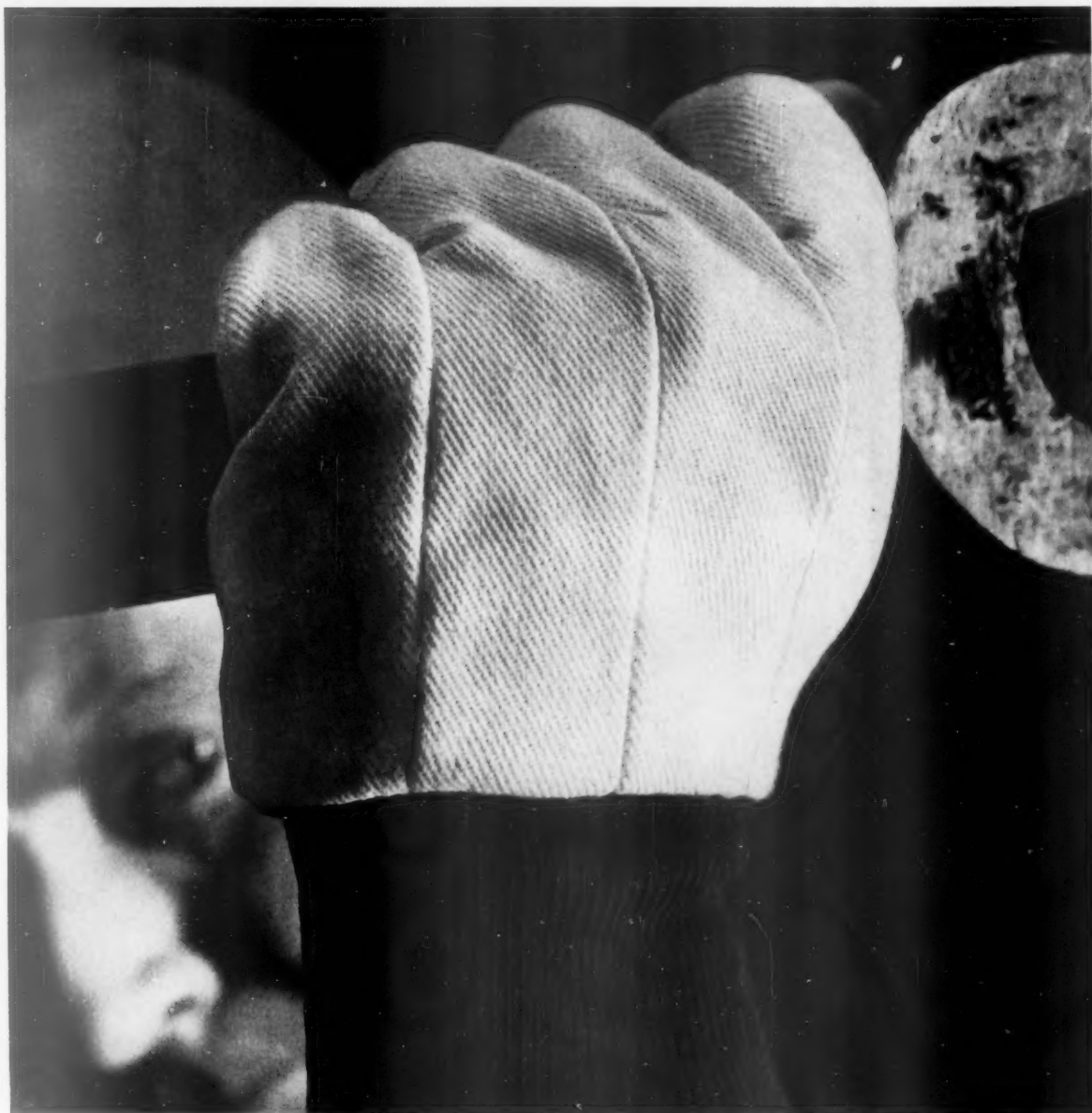
STEEL+PLUS IN ACTION: TECHNICAL ASSISTANCE

The *River Queen's* 55-cubic-yard bucket can scoop up 80 tons in one bite! It's the biggest shovel ever built by Bucyrus-Erie Co., heavier than a Navy destroyer and as high as a thirteen-story building. USS American Steel & Wire Division designed and made a wire rope strong enough to handle the tremendous stresses. It's flexible, as well as abrasion-resistant, so it gives long trouble-free service.



United States Steel

CUT REPLACEMENT COSTS IN HALF



Du Pont Nylon reinforced work gloves outlast others 2 to 1

More and more purchasing agents are discovering what actual on-the-job wear tests prove: Canton flannel work gloves reinforced with 50% Du Pont nylon in the wearing surface can last 2.2 times longer than ordinary cotton Canton flannel gloves—cut replacement

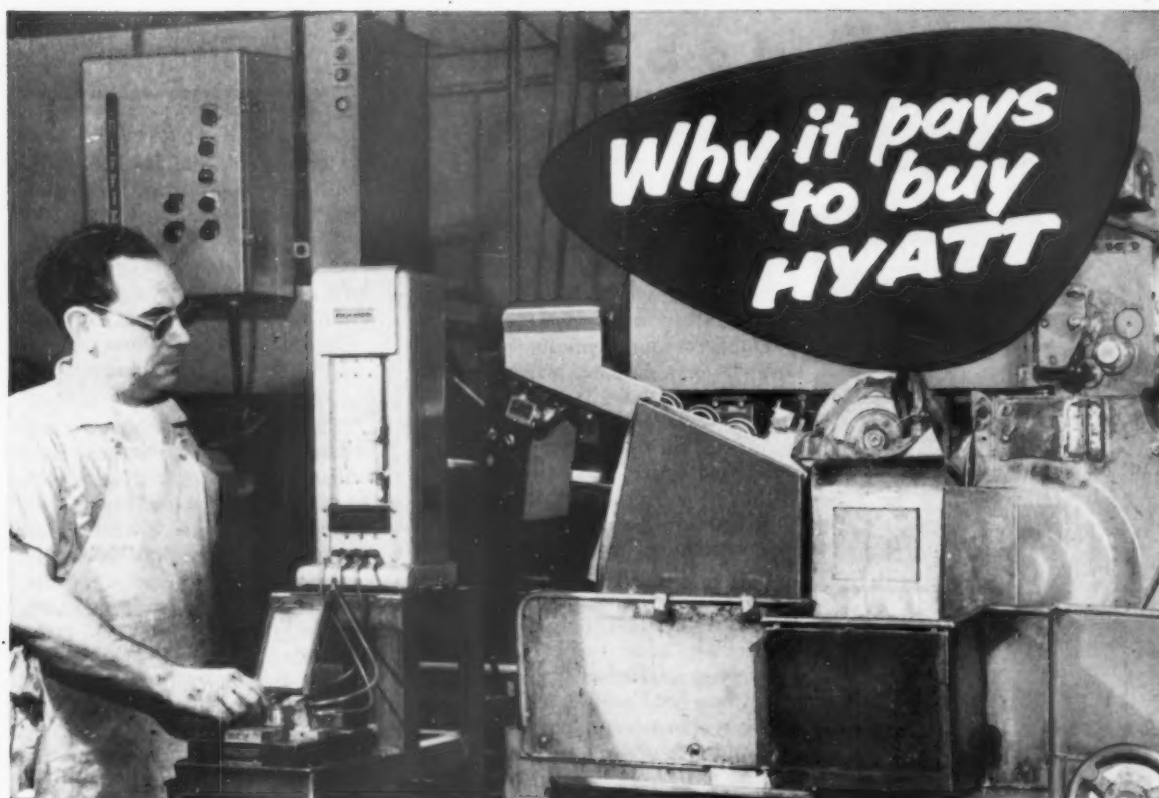
costs in half. Make sure your gloves are built to last... for superior quality and durability ask your resource for Du Pont nylon reinforced work gloves when you buy. E. I. du Pont de Nemours & Co. (Inc.), Textile Fibers Department, Wilmington 98, Delaware.



BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY

90 minutes everybody will be talking about—the Du Pont Show of the Month, "Aladdin", Friday, February 21, 7:30-9:00 P.M., E.S.T., on CBS-TV.

For More Information Write No. 199 on Inquiry Card—Page 32



HYATT'S uncompromising quality controls assure more concentric races for longer, smoother service



The photograph above illustrates something of interest to every purchasing man who wants to be sure of *maximum performance* for every dollar he invests in roller bearings. It shows a trend gage electronically controlling a HYATT bearing race O.D. grinding operation, to assure greater concentricity than ever before achieved in quantity production.

Scrupulous control of internal diameters and clearances is one of the major reasons why HYATT Hy-Rolls run smoother, last longer, and prevent troubles caused by the excessive heat and vibration frequently generated by inferior bearings.

For *lowest bearing cost per hour of service*, standardize on HYATT Hy-Rolls. Hyatt Bearings Division, General Motors Corporation, Harrison, N.J.; Pittsburgh; Detroit; Chicago; Oakland, California.

HYATT THE RECOGNIZED **LEADER** IN CYLINDRICAL BEARINGS

HYATT Hy-ROLL BEARINGS

FOR MODERN INDUSTRY



TAPPING SCREWS

MACHINE SCREWS
& NUTS

DRIVE SCREWS
STOVE BOLTS

CARRIAGE BOLTS
WOOD SCREWS

DOWEL SCREWS
HANGER BOLTS



IN FASTENERS
SOUTHERN IS

quality

If quality is an important element in your assembly operations, it will pay you to see how Southern Screw's Quality and Service has worked wonders for many industries. Southern Screws can do the same for you.

There are no better fasteners than USA-made Southern Screws. Over a billion in stock, available from our warehouses in New York, Chicago, Dallas and Los Angeles . . . Let us quote Southern *quality* screw prices on your requirements. Compare with the cost of conventional screws. Address: Southern Screw Company, P. O. Box 1360, Statesville, N.C.



For More Information Write No. 201
on Inquiry Card—Page 32

f.o.b. "filosofy of buying"

THE LIGHTS have all been put away, and all the new toys broken by now, but there are still a few footnotes to Christmas that are pertinent to P.A.'s to whom the season brings problems:

- Some kind of a record for embarrassing moments was set by Swift & Company when it tried to handle the gift problem from both ends. Everyone on the vendor list received a polite, friendly letter before Christmas asking that they cooperate with Swift on a "no gift" policy. Exactly two weeks later, a sales letter was sent to the same list, just as politely (and firmly) advertising food products of Swift as suitable gifts for executives to give employees, customers and friends. Did we hear somebody say something about teamwork in modern industry?

- Wolverine Tube Division of Calumet & Hecla, Inc., presented its customers with an invaluable gift—a summer vacation for 250 underprivileged children. To every customer went a card explaining the "gift you cannot see"—"For the seventh year our Christmas gift for you will be to send 250 children for two weeks of fun at the Detroit Free Press Fresh Air Camp next summer."

- The Christmas "gift problem" is by no means a dead horse. Our annual survey on the subject brought the greatest number of returns ever. Reprints of the article based on the survey, "Who'll Shoot Santa Claus—The Salesman or the P.A." and a second article, "Purchasing, Sales Unite to Beat Gift Problem" have been ordered in record numbers. A number of companies plan to distribute the articles widely. Possibly prophetic note: Majority of requests for reprints have come from sales departments.

- A printed card displayed prominently under the desk-glass of a well-known P.A. for an engineering-oriented company reads:

When someone is honestly 55% right that's very good and there's no use wrangling. And if someone is 60% right, it's wonderful,

it's great luck and let him thank God. But what's to be said about 75% right? Wise people say this is suspicious. Well, and what about 100% right? Whoever says he's 100% right is a fanatic, a thug, and the worst kind of rascal.
—from an old Jewish legend

SEEMS there's nothing a purchasing agent won't expose himself to in order to do a better job. A release from the office of Governor Foster Furcolo announces that the State Purchasing Bureau of Massachusetts (shouldn't that be Commonwealth Purchasing Bureau?) will hold a "Food Demonstration Day" at the Lemuel Shattuck Hospital in Jamaica Plain. Forty vendors will demonstrate their products to about 250 state personnel in food buying.

Bernard Solomon, state purchasing agent, estimates that a single supplier demonstration will be the equivalent of 50 calls that would otherwise be made by a salesman to various institutions.

A buffet lunch will be served at noon, comprised of sample institutional food products. With all due respect to Massachusetts, one might observe that this is an effective way of curbing the dangerous tendency of purchasing people to accept free lunches from suppliers.

VALUE ANALYSIS is making good progress among industrial purchasing agents—but it still has a long way to go before becoming a universally accepted (or at least practiced) concept. There's encouraging news from the other side of the desk, however. More and more suppliers are studying the idea, analyzing it in terms of their relations to their customers, and adapting its principles to their selling operations. Enthusiasm for the concept is evident even among suppliers of MRO products. Scott Paper Company, for example, is doing a lot more on value analysis than just paying lip service

to it in advertising campaigns. It's actually trying to instruct its salesmen in the fundamentals of value analysis and train them to apply the technique in developing a sale. As part of their basic education in the subject, Scott's sales group heard a talk on value analysis by PURCHASING'S Senior Editor Stuart Heinritz during a recent sales meeting.

UTAH FOUNDATION, a private, non-profit public service agency, concerned with the study of state and local government activities, devoted its October 1957 report to an examination of the state purchasing department. While the report concedes commendable economy in direct administrative costs and notes only a few actual irregularities (breaking down some big requirements into multiple small orders to avoid mandatory bid-and-award procedures applicable to orders amounting to \$1,000 or more, it found a number of shortcomings in policy and procedure—lack of standardization, little advance planning and consolidation of requirements, inadequate records, poor timing, and an excessive number (more than 50%) of orders that were merely a confirmation of purchases already made. There is a strong inference that Utah might do much better by hiring a competent, full-time, professional purchasing executive rather than relying on the part-time attention of a designated number of the Finance Commission to direct the services of a clerical buying staff. The conclusion:

"Purchasing is a scientific function affording the opportunity for substantial economies if sound procedures are followed. Such procedures have been well developed and formulated into widely accepted principles and practices. Business concerns with large purchasing volume employ purchasing agents skilled in these techniques. The state of Utah can achieve important savings in the expenditure of public funds by establishing modern purchasing procedures staffed by competent personnel trained in this technical function."

FEBRUARY 3, 1958

SPECIAL WIRE CLOTH PARTS



- STRAINERS
- GASKETS
- ARRESTORS

- FILTERS
- SHIELDS
- BARRIERS

- TRAPS
- GUARDS
- SCREENS

Just to name a few . . . and most of the parts we are making to special order don't really have a name! Our real specialty is fabricated wire cloth parts, made to your specifications.

Any metal, almost any size, almost any shape . . . we can probably assemble it for you . . . faster, better and at a lower cost, than you can do it yourself.

For more information, just send for our latest Fabricated Parts Catalog.

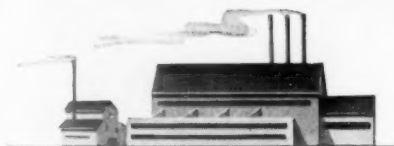


Newark Wire Cloth COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY
For More Information Write No. 202 on Inquiry Card—Page 32

Brainard Strap...

"All Over
The Map"



WAREHOUSES

Strategically placed throughout the United States and Canada, insure quick delivery of tensional and heavy duty strapping as well as tools and other strapping supplies.



POWER TOOLS

For stretching and cutting both heavy duty and tensional strapping, the latest development in modern production strapping.



QUALITY STRAPPING

As a division of Sharon Steel, Brainard's integrated production insures a constant supply of high quality, heavy duty and tensional strapping in all standard sizes and gauges.

Brainard's Steel Strapping is more than a product, it is a system of specifically designed tools and accessories for the most modern of packaging and material handling. Brainard's Strapping service is available throughout the United States and Canada.

Brainard Steel Strapping

Brainard Steel Division, Sharon Steel Corporation
Larchmont Avenue, Warren, Ohio

SHARONSTEEL

569

BRAINARD STEEL STRAPPING DIVISION
WARREN OHIO

Please send me more information about
BRAINARD Steel Strapping.

NAME _____

COMPANY _____

ADDRESS _____

TITLE _____

Highlights

✓ What's New in Business?

Timely and authoritative analysis and interpretation of business trends are musts for today's P.A. For a capsule course on how the economy is going and what the outlook is, be sure to check the popular Pulse of Business section. Start it now in its new spot—on page 7.

✓ The P.A. as a Technical Man

Without taking sides in the old argument—"is it easier to make a buyer out of an engineer or an engineer out of a buyer"—we're sure everyone will agree that purchasing people today need more technical knowledge than ever. Two articles (on pages 72 and 76) kick off a new series designed to help buyers broaden their technological knowledge.

✓ Short Cuts for Buyers

Many readers report picking up good ideas regularly from our "Short Cuts for Buyers" articles. With our new publishing frequency you'll be getting more. In this issue we feature two: a technique for testing samples of tools, materials, and other small purchases before ordering; and a simple way to cut down on a lot of trouble in handling purchase orders. See pages 85 and 86.

✓ New Breed of Buyer—Materials Specialist

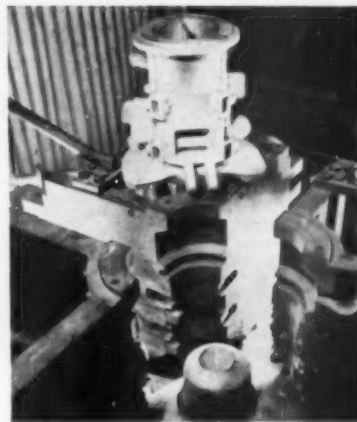
There's been a lot of talk, and not enough action on making materials managers out of purchasing agents. But meanwhile a new and perhaps more significant trend has been developing—making materials specialists out of buyers. A revealing article on page 78 describes how one organization makes its buyers responsible for the whole procurement cycle (including purchasing, production control, material control, etc.) on the commodities they buy.

✓ Get the Most Out of Your Forms

If administrative systems in many a purchasing department could describe their own condition, they'd put it in terms we humans know well—sluggish and run-down. An article on page 69 tells you how one purchasing agent keeps his forms system in tip-top shape and gets the most out of them.

NEW DESIGN OPPORTUNITY

With Monarch Aluminum
Permanent Mold Castings



Modern methods in mold designing—metallurgy—and mass production operations make Monarch Permanent Mold Castings more versatile to fully meet today's end-product requirements competitively.



From complicated industrial castings to finished consumer product castings, ready for assembly, Monarch's wide range of services offer "More Casting Value per Dollar".

This new approach to casting evaluation and "One Source" production in permanent mold—Aluminum Die Casting and Zinc Die Castings is presented in a new brochure, "Manufacturing Achievements in Molten Aluminum". Write for Your Copy Today.



MANUFACTURING
in MOLTEN

ACHIEVEMENTS
ALUMINUM

MONARCH ALUMINUM MFG. COMPANY

9205 Detroit Avenue Cleveland 2, Ohio

For More Information Write No. 204
on Inquiry Card—Page 32



Lighting fixtures, with fluorescent lamps pre-installed, are packed in just the right amount of Gaylord corrugated packaging.

'JUST ENOUGH' PACKAGING SAVES MONEY

Naturally you're concerned about how much shipping protection you give fragile products. But more packaging than needed cuts your profit margin.

Gaylord's engineering and research staff can come up with exactly the right amount of corrugated packaging to do your job. A few of many successes: lighting fixtures, elegant glassware, costly oscilloscopes.

Find out now if you're overdoing a good thing. Call your nearby Gaylord packaging engineer.



CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS
KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS

GAYLORD CONTAINER CORPORATION ★ ST. LOUIS

DIVISION OF **Crown Zellerbach Corporation**



Value Analysis as a Selling Tool

ONE OF THE MOST interesting and significant recent developments in industrial selling is the adoption of value analysis techniques as a selling method.

In selling, as in purchasing, the value theme is not new. But the systematic development and application of analytical methods to improve product values is a distinctly modern approach. With this approach, value becomes more than a theme. It becomes a fact, a policy, and a highly effective marketing tool.

Progressive suppliers are of course aware of the value analysis movement in purchasing. Many of them have acquired an intimate knowledge of the method through participation in such analyses at the invitation of purchasing agents. Now a few have recognized the advantage of training their sales representatives in the techniques that enable them to offer exactly what the purchasing agent is seeking — maximum value.

One selling organization that recently tested this method in one of its sales territories reports enthusiastic acceptance on the part of buyers and notable results in terms of actual sales. Small wonder, for the salesmen were selling in exactly the way that the buyers were striving to buy. They regarded the requirement as a mutual problem, and they analyzed it with the mutual objective of value.

In this test, the supplier discovered that value analysis works just as advantageously for the seller as for the buyer. It enabled the salesman not only to demonstrate value, but to discover and develop new aspects of value. It enabled the company to tailor its products and services more precisely to the buyer's need, and thus to strengthen its position as a favored supply source on initiative and merit.

In 1958, this sales force will go out armed not only with samples and price lists, but with a complete value analysis manual pertinent to their products.

Not long ago, a prominent industrial leader referred to the widening acceptance of value analysis as "The Purchasing Revolution." It is quite possible that we are now on the threshold of a Marketing Revolution based on the same techniques. That would surely be welcomed by all purchasing men. It is one of the brighter prospects in the present business outlook.

Stuart F. Henrity

How to avoid the Purchasing-Production Squeeze

Control of inventory costs is going to be more important than ever during the coming months.

Production, as always, will want to be sure there's enough of the right materials to keep production rolling.

Management will, of course, want to keep investment in inventories under careful control.

This two-sided responsibility makes more difficult the job of buying in the most economical quantities to meet projected requirements.

There's a good way out when it comes to steel: Ryerson immediate service.

With Ryerson carrying your steel inventory, you eliminate the risk of over-

buying, minimize the cost of possession, yet assure your machines all the steel the schedule calls for. You can draw on Ryerson stocks for the kind of steel you want, in the quantities you want, and get it exactly when you want it.

You gain complete flexibility of steel supply without long-term commitments. Should production call for a change in the kind of steel needed, you won't be caught with large stocks you cannot use. Ryerson carries the nation's largest stocks . . . is known for fast, dependable delivery . . . can help you combine orders for still lower costs.

A phone call to Ryerson is the first step in tightening steel inventory control and reducing your over-all steel costs.



RYERSON STEEL

Member of the  Steel Family

Principal Products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE
CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS
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IT'S HARD to believe" says genial Bill Langefeld, director of purchases for the Maytag Company, Newton, Iowa, "that although we manufacture many of the major parts for our home laundry equipment, we still had to buy to the tune of \$60,000,000 in 1956. To do this big job efficiently, our buying tools must be as sharp as those that turn out close tolerance pieces in our shops."

At Maytag, six men do the buying. Four assistant buyers and clerical people bring the total purchasing personnel to 28. The assistant director of purchases and the buying supervisor are responsible for certain commodity purchases in addition to administrative duties.

Purchasing uses two traveling requisition forms, one for tools and maintenance, one for production parts. This is how the tool requisition works:

Requisitions are kept in the tool crib—they control the ordering quantity. A master card in the tool crib tells what is used and the dies it is used on, so that when a die is obsoleted the master card will show a change in inventory requirement.

When there is a tool requirement, the card comes directly to purchasing. The buyer accumulates the cards, checks on urgency of requests, consolidates an order with one or two companies for quantity discounts. The card then goes to a typist pool of order writers. The completed order and requisition card are returned to the buyer. He signs the order and returns requisition card to originator.

A larger traveling requisition form is used for production parts. The "Requisition Record" part of the form is filled in by inventory control. The "Order Record" part is filled in by purchasing when the purchase is negotiated. This form is designed for flexible handling.

Make Your Forms Functional

By C. D. Francisco

The basic forms, traveling requisition, purchase order, follow-up and others are an important part of purchasing. There are almost as many different ways of using these tools as there are purchasing departments. As you read the following article, compare. How functional are your form designs?



Director of Purchases Langefeld—administrator, negotiator, executive.

For example, when a blanket purchase is negotiated, number (9) is circled in the upper right corner under "Shipping Instructions-Schedule." Then a "Purchase Order Release" form is made out in triplicate. All three copies go to the vendor, who returns the acknowledgment copy only. Buyers use this copy for follow-up. Thus when delivery changes are negotiated he has the latest information. The vendor's field salesman also gets a copy of purchase order release from home office. It's important for him to be kept up to date so that best possible service can be rendered.

Time-Saving Expediting

Maytag has an expediting system—but it doesn't take up the buyer's time. A girl, who posts shipping notices to the follow-up copy of the purchase order, checks the purchase orders once a week for the buyers. If any orders are questionable, she sends out a follow-up form which is pre-printed with twenty different requests for clarification. These include delivery promises, incorrect invoices, sales taxes, incomplete shipments, many others. Basic reference data are typed on the form, and only a flick of the wrist is needed to check the information requested. The answer comes back on the same form.

This form saves a lot of expediting costs. Only unusual circumstances require the buyer's attention.

Purchase order forms get the functional treatment too. Maytag uses a seven part form, numbered with suffixes "P" for production items, "M" for maintenance-Plant 1, "A" for maintenance-Plant 2. (You can carry this designation alphabetically to as many plants as you are operating.) The first copy goes to the vendor, second copy to requestor. The third copy (receiving report master) goes to receiving. In the case of partial shipments, receiving just runs off a copy from the master on a duplicating machine, listing the items received, and sends copies to purchasing at the end of each day.

The fourth copy is filed in a numerical file for cross reference. Somebody may call for informa-

The image shows two forms from Maytag. The top form is a large requisition form with multiple sections for item details, quantities, and pricing. The bottom form is a smaller, more detailed follow-up form titled "Part # 3-1120" and "Del. No. 27 Spec. Purch". It contains specific data for a requisition, including item numbers, descriptions, and dates. Both forms have a reverse side for cumulative information.

Both requisitions carry cumulative information on reverse side.

The diagram illustrates a master copy and a duplicate copy of a receiving report. The master copy is a large form with a grid for item details. The duplicate copy is a smaller form that is a copy of the master copy, showing the same grid and data. The diagram shows how the master copy is used to create multiple duplicate copies for different purposes.

Duplicating master eliminates re-writing basic information for each partial shipment.

FOLLOW UP Date _____

THE MAYTAG COMPANY
NEWTON, IOWA

TO _____

FOR _____

PLEASE REPLY BY:

THIS FORM	WIRE	PHONE	TO THE ATTORNEY
-----------	------	-------	-----------------

This is an important request for information concerning inquiry
No. _____
P. O. No. _____

<p>1. We have no record of receiving your acknowledgment.</p> <p>2. When will you ship it? If shipped, advise date, rating, price, weight, and quantity.</p> <p>3. Delivery period to permit received when are you shipping before?</p> <p>4. Make delivery prompt, make specific.</p> <p>5. Shipping in terms of _____ are shipped on _____ when will _____ are due or release be shipped.</p> <p>6. Price of material in your invoice No. _____ dated _____ Send signed delivery receipt.</p> <p>7. You have not shipped as promised when will you ship?</p> <p>8. Price on invoice is _____ Price on quotation is _____ Please advise.</p> <p>9. Attached invoice has no show purchase order no. _____</p> <p>10. Attached invoice shows incorrect order no. _____</p> <p>11. Show label and material separately.</p> <p>12. Cost of material or packed, make should be _____</p>	<p>13. Material not subject to selective tax.</p> <p>14. We have received _____ prices, your P.S. no. _____ in _____ context. Please send invoice in duplicate for this shipment.</p> <p>15. Transportation charges must be supported by receipted bill.</p> <p>16. Extension of additional material as shown.</p> <p>17. Quotation not received.</p> <p>18. Our records show a balance of _____ prices. Are you still ordering complete?</p> <p>19. Shipping containers must show P.O. no. description, price in container.</p> <p>20. No packing slip found in recent shipments. Please include in future shipments.</p>
--	--

Use this area to answer requests checked.

By: _____ Date _____

Printed form follow-up saves time, other costly correspondence.



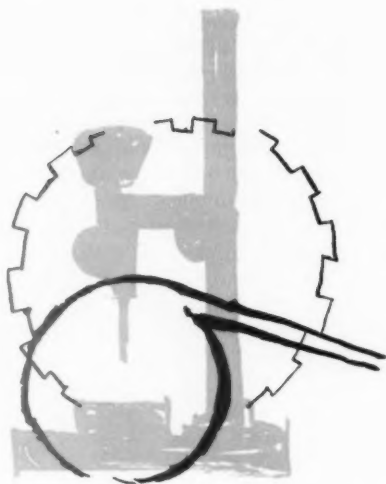
Maytag's purchasing department features centrally located files, equally convenient to all.

tion and know only the order number. The fifth copy goes to the accounting department. The sixth copy goes to inventory control on all -P orders. On others it is used in a historical information file along with the drawing, correspondence, invoice copies, etc.

The seventh copy, which is the follow-up copy, goes into an unusual file. This is a stiff copy, made of heavy kraft paper. It makes a "stand-up" file—easy to get at, and filed alphabetically by vendor. This file is in seven sections, A to Z. If one section of the file is being used, the others are still available.

In a progressive company, purchase order changes are the order of the day. Price changes, cancellations, quantity changes, drawing changes. All these have to be geared to a fluctuating economy. Consequently, change order forms have to be used to meet changing requirements. Maytag uses two forms for change orders—one for price changes, cancellations, quantity changes. The other for drawing revisions only. But both have eight copies with the same distribution. Copies 1 and 2 go to the vendor. Copy 3 is attached to the follow-up copy of the purchase order. It is replaced with the signed acknowledgment copy of the change order when returned from the vendor. Copy 4 to receiving. Copy 5 to originator. Copy 6 to a numerical file. Copy 7 to accounting, and copy 8 to the historical file.

Another good idea from Maytag purchasing is an equipment and contract file. This is for negotiations on capital equipment, building contracting, demolition and related items. Maintenance and engineering departments often need information on these contracts. If bids, correspondence and drawings are in separate files, a long tedious search takes place. This used to happen at Maytag. Now, all information is kept in one file, alphabetically by equipment manufacturer or contractor. The file contains analysis of bids, original proposals and copies of drawings, specifications and purchase order.



By T. C. DuMond

How to Buy Fabricated Parts and Materials

Purchasing can be a major force on the team that has the job of keeping a company's products competitive. But it won't even get in the game unless it knows the technical aspects of getting better parts and materials at lower costs.

INDUSTRY HAS become so complex that a team of specialists is now necessary to shepherd modern designs through the many stages which convert them from dreamy ideas into perfectly functioning, saleable products. Purchasing can contribute much to this team effort—if it knows enough about technical matters to suggest better, less costly or more rapid methods of producing parts and components.

How can this be done?

Basically, there are two methods—and many variations—by which purchasing personnel can provide technical assistance to other departments.

Many companies now have formal value analysis programs. Their value analysts serve as liaison between purchasing and engineering and production. The purpose of value analysis is to find more economical methods of making products without any sacrifice in quality or functionality. Designers are often forced, under the pressures of development time tables, to use methods and materials they know well rather than to seek the ideal combination. On the other hand, value

This is the first in a series of articles on the technical aspects of purchasing. The material that will be presented is meant to provide a "refresher course" for experienced buyers and basic instruction for trainees or buyers new to specific commodities. Mr. DuMond is the author of the well-known book, "Fabricated Materials and Parts" (Reinhold Publishing Corp., New York). A mechanical engineer, he has spent many years in technical writing and editing. He has published two other books on engineering materials and fabricated shapes.

analysts can look at their company's products more objectively—and perhaps more leisurely—and often develop plans or suggestions for cost saving changes. Value analysis is usually a function of the purchasing department.

Purchasing Research

Where there is no formal program, the technically trained purchasing man can often save many

times his salary by doing research of a similar type. There is really no one place to start this activity. Products which have been made for years are fully as susceptible to change as are new designs which come straight from the designer's board. A note of caution: Don't try to force your ideas and discoveries on the designer or production man. Be armed with good sound facts and figures to prove your case and then proceed to do a little selling; you'll get much farther.

One of the principal areas in which technically trained purchasing men can be extremely useful is in the selection of fabricated materials and parts castings, forgings, screw machine parts and a myriad of others. New developments in old manufacturing processes and a steady introduction of new methods and new metals and alloys make the problem of selecting the ideal or most practicable method for any part more complex. So do the constant changes in labor rates and materials prices. Too, designers, like other humans, are prone to stick to those things they know best. Thus, if they have used sand

castings and forgings for years, they tend to continue using them until forced by facts or circumstances to try something different. The purchasing department can be one of the major forces to create these changes and the pressures can be great if there is sound proof that cost reductions are possible—even in the face of rising labor costs and more expensive materials.

Let's look at a couple of examples of the problems and possible results:

First, take the turbine bucket which has caused untold headaches to countless designers, engineers and purchasing men. One company recently listed the methods employed to make this one product. They included precision forging, powder metallurgy, investment casting, upset forging and machined and ground parts. All of these methods were satisfactory under certain conditions. A final choice depended upon a combination of other factors such as those to be discussed later. Other parts can be made by an equal number of methods, if not more. The problem then is, in essence: What method is best considering all of the factors which must be weighed in making a decision?

Savings Can Be Made

Although this is an extreme example from the costs standpoint, the point it makes is true regardless of the material involved. The only difference is in the amount that can be saved. An airplane manufacturer needed a long titanium part which seemed logical to make as a one-piece forging. In its finished form the part weighed about 25 pounds. However, because of the complexity of shape and the amount of machining required to achieve the final shape, the part started out as a forging weighing 575 pounds. With titanium at \$12 per pound, this represented a cost of \$6900 of which \$6300 was subsequently wasted through machining. By making three smaller forgings, which were relatively simple in shape, and then joining them by welding to produce the original design, service requirements

were met and costs were reduced to a small fraction of the original cost. Not only was the scrap loss reduced, but a vast amount of machining was eliminated.

What are the major factors to be considered in choosing the method by which a part is to be made? There are some 18 to 20 selection factors all of which must be weighed to reach a proper decision. Some of these factors are more important than others, but yet all should play a part in making a final choice of method.

Major Factors

We start with a relatively simple problem: A part must be made by the most economical method and of a material that will meet specifications dictated by service requirements. Were cost not a factor, it is possible that one consideration alone would lead to a final, satisfactory choice. However, this ideal situation is seldom before us.

Materials—In many instances the first point to be considered is the material. Where high temperature, corrosion, wear, lightness or other special services conditions are involved, the choice is likely to be restricted to a few materials. Where no special problem exists, any number of materials might be used. On a weight basis, irons and steels are usually least expensive. However, aluminum is often lowest in cost on a volume basis. Aluminum is capable of being formed by at least 18 different methods; other material can only be formed by a few methods.

Shape—Simple shapes can be made by any of many methods. But as complexity of a part increases, the ways to manufacture decrease. In other words, the more complex the shape the more difficult it becomes to find an economical method of making it. And if a particular material must be used, the shape in which it must be furnished may put a definite restriction on production meth-

Which Material For Which Process?

	Low Carbon Iron and Steel	High Carbon Steel	Alloy Steels	Stainless Steels	Tool and Die Steels	Cast and Malleable Irons	Copper	Brass	Bronze	Aluminum	Magnesium	Titanium	Nickel-base Alloys	Zinc Alloys	Noble Metals	Refractory Metals
Sand Castings	x	x	x	x	x	x	x	x	x	x	x	x	x			
Shell Mold Castings		x	x	x		x	x	x	x	x	x	x	x			
Permanent Mold Castings						x		x	x	x	x				x	
Plaster Mold Castings									x	x	x					
Die Castings									x	x	x	x			x	
Investment Castings		x	x	x					x	x	x	x	x		x	x
Drop Forgings	x	x	x	x	x				x	x	x	x	x	x		
Press Forgings	x	x	x	x					x	x	x	x	x	x		
Upset Forgings	x	x	x	x					x	x	x	x	x	x		
Cold Headed Parts	x	x	x	x					x	x	x	x			x	
Cut Extrusions	x								x	x	x	x	x	x		
Impact Extrusions									x	x	x	x	x		x	
Powder Metal Parts	x	x							x	x	x	x			x	x
Stampings	x	x	x	x					x	x		x	x	x	x	
Screw Machine Parts	x	x	x	x					x	x	x	x	x	x		
Electroformed Parts	x								x			x				
Sectioned Tubing	x	x	x	x	x				x	x	x	x	x	x		
Spinnings	x	x	x						x	x	x	x	x	x		
Welded & Brazed Parts	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

ods. As indicated previously, not all materials can be fabricated by all forming methods. In some instances two or more subassemblies might be produced and then joined together by welding or mechanical fastening to provide the major assembly.

Quantities—Often the number of parts required dictates or restricts the choice of method of production. Some methods which are most economical for the production of thousands of similar parts are too expensive when relatively few parts are needed. For this reason, it is often good to buy a year's production needs at one time, particularly if the quantities involved justify a high production rate method.

Tooling Costs—Tooling costs for parts range from a few to many thousands of dollars. In some cases, high tooling costs are justified to obtain high production rates, superior surface finish or some other attribute. In other instances, high tooling costs would be enough to rule out a particular production method. Sand castings, generally, are among the lowest in tooling costs, while die castings and forgings often involve very high costs. Other high production methods fall somewhere in between. Usually the purchaser pays original tooling costs and the parts supplier pays for maintaining the tools dies and patterns.

Direct Labor Costs—Some production processes need little skilled labor. Where the method

is still reasonably close to being an art, considerable direct labor of a highly skilled nature is probably required. Where high labor costs are met, the process should offer other advantages to justify the expense and to keep overall costs in line. Many of the casting processes have high labor costs because of the considerable hand work involved. Extruding, cold heading and automatic screw machine production involve lower labor costs because they are nearly automatic.

Finishing Costs—Should the part require a certain degree of finish you must pick a method capable of producing such a finish or to plan on subsequent finishing operations. Obviously, if the part does not show, does not require a high degree of smoothness to match a mating surface, or have to meet extremely close dimensional tolerances, there is no absolute need for a fine finish. Money paid to obtain it would be wasted. Among the processes offering superior finishes are die castings, powder metallurgy, cold heading, extruding, investment casting and shell molding. Generally sand castings and forgings require subsequent finishing to obtain proper finishes and dimensions.

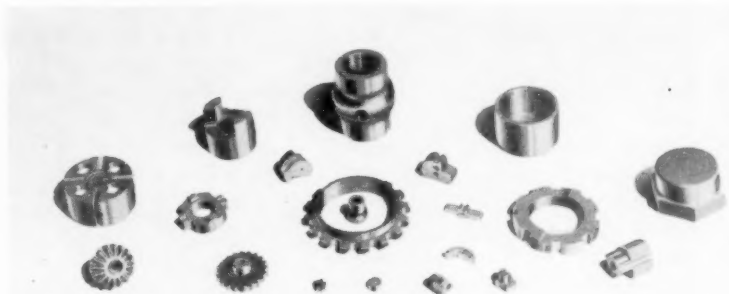
Scrap Loss—At today's metal prices, scrap generation can be very expensive. In some processes and with some materials, scrap recovery can be high, thus reducing costs somewhat. The reverse is also true. In other processes

practically no scrap is produced. All other things being equal, this could be the deciding factor and one which is often overlooked. Generally, processes involving machining are the most wasteful as far as scrap is concerned. Extruding wastes practically no material, which is also true of a few other methods. Most casting processes are capable of reusing scrap with practically no loss of material.

Size—With one or two exceptions, all processes for the production of parts have definite size limitations. But the ranges are being extended all of the time. Some methods cannot form extremely small parts and others are good only for the production of moderately small pieces. These limitations will automatically eliminate certain processes, although for average parts there usually will be several available choices. There is practically no upper limit to the size of part which can be produced by sand casting. When extremely small parts are concerned, one of the precision processes is the most likely choice.

Precision—Although some manufacturing methods are inherently capable of producing to a higher degree of accuracy than others, precision is a relative term and must be spelled out quite carefully. Usually, when the capabilities of the various methods are listed and when tolerance limits they are capable of are referred to, the tolerances cited are those to be expected under average conditions. Most methods can be made to produce to greater accuracies, but this involves more time, more attention and probably more scrapped parts than normal. So costs skyrocket. Unless a specific process is essential to produce the part, its normal tolerance limits should not be exceeded, except where a premium in price can be justified. Normally, forging is not considered a highly precise method, but there are semi-precision forgings and precision forgings, with costs rising directly with the degree of precision.

Mechanical Properties—All materials have certain minimum mechanical properties such as tensile strength and hardness, according to the form in which they



New developments make the selection of the most practicable method for any part a complex problem. These parts might have been made in a number of ways—in this case, they are all of powdered metal.

are used. Cast metals are usually less strong than rolled, and forged metals are strongest of all. Of course, not all metals are available in all forms. But when there is a choice, the form selected can have considerable effect on the properties that can be expected. Often parts are supplied in materials and forms that provide much more strength than is needed. Switching to a less costly process, which gives enough in the way of mechanical properties is often a certain method of reducing costs.

Surface Detail—When surface detail is important, a method must be selected that can reproduce that detail. Often you must get the necessary detail in some other way such as coining, stamping, etching or machining. Electroforming is reputed to be the best method for reproducing detail. Plaster mold casting, shell molding and die casting can also reproduce detail with a reasonable degree of accuracy.

Rate of Production—When parts are needed by the millions, you of course use a method capable of continuous high speed production with little human supervision. Otherwise, costs shoot up and assembly lines are always in danger of being slowed down for lack of parts. Many production methods are inherently slow, so unless one of them has certain "musts" as far as your problem is concerned, it should be avoided. Screw machines, cold headers and stamping presses are usually rated as capable of producing parts at the rate of 3,000 per hour or more. These rates cannot always be achieved, of course. Spinings and electroformed parts and some castings cannot be made at a rate any faster than 100 per hour, if that high. There are, naturally, some exceptions to these limitations.

Getting into Production—Most of the factors discussed up to this point are concerned, at least to some degree, with design and costs. One other factor might be of major importance and that is the time required to convert a design into a finished product. In other words, how long will it take

SELECTION FACTORS FOR VARIOUS METAL FORMS

*Indicates the types of parts rating as best, from a cost standpoint, in each category. Other ratings are relative, with (1) being best, (2) medium, and (3) highest in cost.

RAW MATERIALS	TOOL AND DIE COSTS	DIRECT LABOR
1 *Sand Castings	1 *Cut Extrusions	1 *Powder Metal Parts
1 Cold Headed Parts	1 *Sectioned Tubing	1 Sectioned Tubing
1-2 Drop Forgings	1 *Welded & Brazed Parts	1 Impact Extrusions
1-2 Press Forgings	1 Sand Castings	1 Cut Extrusions
1-2 Upset Forgings	1 Investment Castings	1 Cold Headed Parts
1-2 Stampings	1 Spinings	1-2 Die Castings
1-2 Spinings	2 Perm. Mold Castings	2 Perm. Mold Castings
1-2 Screw Machine Parts	2 Plaster Mold Castings	2 Drop Forgings
1-2 Welded & Brazed Parts	2 Cold Headed Parts	2 Press Forgings
1-3 Electroformed Parts	2 Impact Extrusions	2 Upset Forgings
2 Perm. Mold Castings	2 Powder Metal Parts	2 Powder Metal Parts
2 Plaster Mold Castings	2 Screw Machine Parts	2 Stampings
2 Die Castings	2 Electroformed Parts	2-3 Electroformed Parts
2 Impact Extrusions	3 Die Castings	2-3 Welded & Brazed Parts
3 Investment Castings	3 Drop Forgings	3 Spinings
3 Cut Extrusions	3 Press Forgings	3 Investment Castings
3 Sectioned Tubing	3 Upset Forgings	3 Sand Castings
3 Powder Metal Parts	3 Stampings	3 Plaster Mold Castings
FINISHING	SCRAP LOSS	RATE OF OUTPUT
1 *Screw Machine Parts	1 *Powder Metals Parts	1 *Die Castings
1 *Powder Metal Parts	1 *Cut Extrusions	1 *Screw Machine Parts
1 Plaster Mold Castings	1 *Sectioned Tubing	1 *Cold Headed Parts
1 Die Castings	1 Welded & Brazed Parts	1 *Stampings
1 Investment Castings	1 Electroformed Parts	1 Cut Extrusions
1 Cut Extrusions	1 Impact Extrusions	1 Impact Extrusions
1 Impact Extrusions	1 Cold Headed Parts	1 Powder Metal Parts
1 Stampings	1 Investment Castings	1 Sectioned Tubing
1 Spinings	1 Die Castings	1-2 Plaster Mold Castings
1 Electroformed Parts	1 Plaster Mold Castings	2 Perm. Mold Castings
1-2 Perm. Mold Castings	1 Perm. Mold Castings	2-3 Sand Castings
1-2 Sectioned Tubing	1-2 Stampings	2-3 Investment Castings
2 Welded & Brazed Parts	1-2 Spinings	2-3 Drop Forgings
2 Cold Headed Parts	2 Sand Castings	2-3 Press Forgings
2 Upset Forgings	2 Drop Forgings	2-3 Upset Forgings
2 Press Forgings	2 Press Forgings	2-3 Welded & Brazed Parts
2 Drop Forgings	2 Upset Forgings	3 Spinings
3 Sand Castings	3 Screw Machine Parts	3 Electroformed Parts

after all other details are decided upon before parts become available. Necessary times for getting into production can range from a few hours to several weeks or even months. Those methods involving precision tools and dies are, of course, the ones in which long delays are likely to be encountered. With simple shapes, a few hours might be all that is required to start producing by such methods as investment casting, spinning and screw machining.

Finally, don't be reluctant about consulting suppliers of metal parts and shapes. Their past experience is likely to be of help to you in reaching a decision. They will probably also be able to suggest

money saving short cuts that might not be familiar to those who are only casually acquainted with a process. Any reliable organization can be depended upon to turn down attempts to use the process it specializes in if the proposed application is not reasonably sound. Many materials suppliers also have available engineering advisory services that are able and willing to give you a hand.

Subsequent articles in this series will discuss in detail the advantages and limitations of the major metal forms and will point out how the factors discussed here apply to specific production methods.

Buying Quality

Specific suggestions any purchasing department can use to make certain quality is what it should be.

By John Van de Water, General Buyer,
Worthington Corporation

WHAT DOES quality control mean to the purchasing? An awful lot has been written about it but most of the time it has been presented from either the production or inspection viewpoint. The emphasis has been on record keeping, inspection techniques—with an occasional side glance at complicated statistical methods. It is often difficult to see just what the purchasing department's role should be.

The engineer can write quality into his specifications. The inspector can test for it. But only the buyer can make sure the desired quality is there when the material is delivered. Quality enters the product only once, at the point of manufacture, and it is up to purchasing to make certain the manufacturer has the information needed to produce the desired quality.

Spell Out Quality Needs

To make certain it gets the quality it wants the purchasing department should:

- Determine that material ordered is adequately described and that specifications are complete, clear and realistic.
- Inform vendors of quality requirements and inspection methods and advise them promptly when material is rejected and the reason for rejection.
- Cooperate with other departments in establishing material standardization to determine desired quality and eliminate special requirements.
- Discuss with the requisitioner quality requirements which appear excessive, incomplete or unclear.
- Select vendors capable of supplying materials of the desired quality.
- Place the burden of proof on the vendor. Ask for quality certifications (analyses, tests, inspection reports, etc.) whenever it is possible and consistent with economical buying. This will relieve the shop of extensive testing and inspection work.
- Maintain quality performance records on vendors as a guide to future buying. These records should cover reject rates, rework, backcharges, field complaints, etc.

As part of its responsibility for quality, purchasing should make certain that vendors have as much information as possible on:

Material standards
Performance standards
Chemical analyses
Physical properties
Dimensional tolerances

These may be described by reference to published standards (e.g. ASA, ASTM, NEMA) or by full descriptions in the purchase order itself.

Keep the Vendor Informed

As no manufacturer can be expected to meet absolute standards, the tolerances or acceptable variations must be indicated as well, along with the buyer's inspection procedures. A complete quality specification should in-

clude as much of the following information as possible:

1. Quality required
 - a. Standards
 - b. Tolerances
 - c. Acceptable rejection rates
2. Methods by which the buyer will determine acceptability
 - a. Inspection technique
 - b. Sampling method
 - c. Size of sample
3. Tests to be applied at buyer's plant
 - a. Tests standards
 - b. Test equipment used

This information will help the vendor produce material of acceptable quality. He will be able to subject his product to the appropriate tests and reduce costly rejections at the receiving plant.

Cut Inspection Costs

We know that with statistical techniques 100 per cent inspection is not necessary. Although this is not the place to discuss the techniques in detail it should be noted that they will include frequency distribution curves, control charts and acceptance sampling. The particular method used is usually determined by:

Desired quality level
Cost of item
Nature of product
Quantity received
Degree of certainty needed
Past performance of vendor

With a vendor who uses acceptable inspection procedures of his own and whose past performance has proved him dependable, the buyer can cut costs con-

siderably by reducing his inspection to all but a minimum. It is not recommended that inspection be eliminated altogether, regardless of how reliable the vendor's reports may be. Human fallibility being what it is, some checks should be made at all times.

Material standardization can contribute greatly to quality buying. The tendency in manufacturing today is to produce more and more end products from a limited number of standard parts. When standardizing design and dimensions it is important to standardize quality as well. It is desirable to eliminate special goods as much as possible. When industry quality standards are adhered to quality control becomes simpler and less expensive. Increased vendor experience in manufacturing to a given specification means better controls and a more uniform product.

Help in Selecting Vendors

Accurate quality descriptions can also help in selecting vendors. Bids will be based on the same standards and vendors will have the opportunity to take exception to conditions they can't meet. Without an effective quality control system quality considerations cannot enter into vendor selection and as a result price will not be properly evaluated.

Vendor performance records are therefore essential in buying quality. They need not necessarily be maintained by the purchasing department. In many ways this is a logical responsibility of the inspection group. Yet the information must be readily available for purchasing to do a complete job.

A thorough quality buying program will be welcomed by suppliers because the vendor will know the buyer's requirements exactly and the basis on which material is accepted or rejected. He will be able to produce a more acceptable product and increase buyer satisfaction. He can set up his own quality controls and offer material of guaranteed quality. He can stress those points of quality which are significant to the buyer. He will know what to do to retain the business. His performance will be rated by facts and not by opinion.

U.S. BASIC INDUSTRY INC.

Quality Requirements

Part Name Rocker Arm

Part No. 3591-C

Drawing No. B-1259

Critical Features A, C & K Dimensions
Hardness

Tolerances See drawing

Acceptable Quality Level 1% maximum rejection

Inspection Method Acceptance sampling
Sample plan "B" attached

Special Tests None

Test Equipment Limit gages
Hardness tester

Complete specifications and a detailed explanation of quality requirements are needed to help the vendor do an acceptable job.

U.S. BASIC INDUSTRY INC.

Inspection Department

VENDOR PERFORMANCE RECORD

Vendor A. J. Corp.

Period Covered

From: 8/1/57

To: 8/30/57

Part No.	Purchase Order No.	Quantity Received	Date	Total Defective	% Rejected	Acceptable Quality Level
3295	F-1295	102	8/2	1	.98%	1%
2651	F-1301	106	8/5	0	----	1%
2651	F-1301	153	8/20	2	1.31%	1%
2651	F-1301	195	8/23	2	1.02%	1%
1285C	F-1325	1006	8/27	8	.79%	.5%

Information on vendors in the form of performance records is a must for any purchasing department doing an all-out job of buying quality.

Are Buyers Becoming Obsolete?

They are at G. E.'s Evendale plant.

Buyers are being replaced with materials specialists.

The change isn't nominal.

It represents a brand new approach to materials management.

THE TITLE of buyer could become obsolete at General Electric's Jet Engine Department in Evendale, Ohio. On the department's J-79 engine project, for example, there aren't any buyers at all! The buying job is being done, of course. But the official title of the men doing it is "material specialist." This is not just a gimmick to make buyers feel they're big shots. It's a brand new job classification that covers everything a buyer used to do plus a lot more. The material specialist is basically responsible for both buying and the production and material control activities traditionally performed at manufacturing staff level.

The creation of the material specialists was one of the products of a big reorganization at Evendale. Before the change, purchasing and production control were distinctly separate functions as they are in most other organizations.

Production control took master schedules, calculated purchase requirements, and prepared requisitions. Purchasing went ahead from there. Both groups had to work closely with engineering. Engineering changes by the thousands are normal in aircraft development and Evendale J.E.D. is no exception. Continuous coordination was essential between the three groups. A multitude of schedule changes, quality control

problems, etc. complicated the relationships further.

Fewer Channels

Communication is now much simpler. One man—the material specialist—takes care of both purchasing and production control problems. The problem of purchasing's and production control's authority overlapping certain problems is eliminated. No longer is there any confusion over who should handle what. Nor is there any question of who's responsible for what. Materials responsibility centers entirely on the materials specialist; buck passing is a thing of the past.

This simplified approach to procurement has brought dramatic reductions in overhead. Under the old set-up, J.E.D.'s budget called for 607 people by the end of 1957. With the new organization, there are just 275 people in the materials sub-section. In other words, *the same job is being done by less than half as many people as would be needed in a conventional organization.* And it's being done better, because information now passes through fewer hands before action is taken. The "middle man" in procurement has been done away with by a radically different approach to materials management.

With the new set-up, the materials sub-section under Materials Manager G. E. Hotaling has

these nine basic responsibilities:

1. Scheduling production of each part,
2. Buying,
3. Inventory control,
4. Vendor follow-up and expediting,
5. Receiving and shipping,
6. Assembly & test scheduling and follow-up,
7. Stores control,
8. Internal department expediting,
9. Programming manufacturing capacities.

In most organizations, you'd find each of the above nine functions performed by a separate group. Although some functions might be under a given department (e.g. follow-up and expediting might be under purchasing), the organization would still be one in which nine different jobs are done by nine different groups of people. Since all these functions are inter-related, there's got to be communication among groups. And that's exactly how the need for paperwork is created. Within the nine inter-related functions, there are theoretically 36 possible channels of communications.

(To the mathematically inclined this is calculated with the formula $(n-1) + (n-2) + (n-3) \dots$ etc. If you're not mathematically inclined, you can verify this graphically. Put 9 points on a piece of paper and draw every line necessary to connect each point with every other point. You'll wind up with 36 lines.)

As you reduce the number of possible channels of communication, you also reduce the paperwork potential. When J.E.D. created the materials specialist, it combined the first four of the nine functions listed into one job classification. When one man handles scheduling, buying, inventory control, and vendor follow-up and expediting, he need communicate only with himself. This single step makes for an amazing reduction in possible channels of communication. Reducing the number of functions from nine to six means that communications channels are reduced from 36 to 15. (If you don't believe it, check the figures with the formula or by drawing a chart).

The saving that comes from fewer channels of communication is more than theoretical. This, of course, is proved by the substantial reductions in personnel Mr. Hotaling was able to make. It's also proved by this single fact: *by combining the purchasing and production control functions, the need for the 600,000 sheets of paper per year used in requisitioning was done away with.*

Actually, with J.E.D.'s new set-up, there are nowhere near 15 possible channels of communications within the materials subsection. Organization by product rather than by function helps keep red tape at an absolute minimum.

In a conventional purchasing organization, each buyer specializes in one or more commodities. He handles these commodities for all of the company's products. His counterpart in production is also a specialist in a given group of commodities or suppliers. So is the expeditor and all other materials personnel. With this type of organization, you gain all the advantages of specialization. But you also acquire a bureaucracy in the process—especially if the over-all business is a big one.

Organize by Product

With an organization setup along product lines, you sacrifice some of the advantages of specialization. But if the operation is big, this loss is more than offset by enormous gains in efficiency because of the less complex setup.



"Good vendor relations are essential when you buy in small quantities," says G. E. Hotaling, materials manager of the G. E. Jet Engine Department. Here he greets Fred Baker, I-T-E Circuit Breaker sales representative.

At J.E.D., all the buying is done in four groups reporting to Materials Manager Hotaling. There are separate groups for each of three engine products—the J-79, the X-211, and the X-279. In addition, there's a general purchasing group under Purchasing Agent H. H. McIlvain.

Each of the project groups approaches being a self-contained materials department. **The materials supervisor assigned to the project has over-all responsibility for:**

- Getting basic requirements from engineering,**

- Locating supply sources—either within G. E. or from outside suppliers,**

- Determining required delivery dates and quantities,**

- Placing orders,**
Expediting and follow-up for delivery,

- Scheduling assembly build-ups,**
Handling liaison on engine test,
Maintaining property and inventory control records.

The biggest of the project groups is that assigned to the J-79—under ex-Production Control Manager H. J. Shirley. Although he reports directly to Materials Manager Hotaling, Shirley is actually part of an over-all project

team of materials personnel, engineers, and others assigned to the J-79. Shirley's people are completely responsible for all phases of procurement on their project. If something goes wrong at any stage in the process, they've got no one to blame but themselves.

Shirley's unit (which is bigger than most purchasing departments) has three "line" groups that actually issue purchase orders. Again, organization is by-product not function. One group handles the forward section of the engine, another the aft section, and a third group handles accessories, controls and miscellaneous items. Each of these groups is broken down further into sub-groups that are more specialized (by-product). For example, in the forward section group, there are four separate sub-groups. One handles gear boxes, another stators, etc.

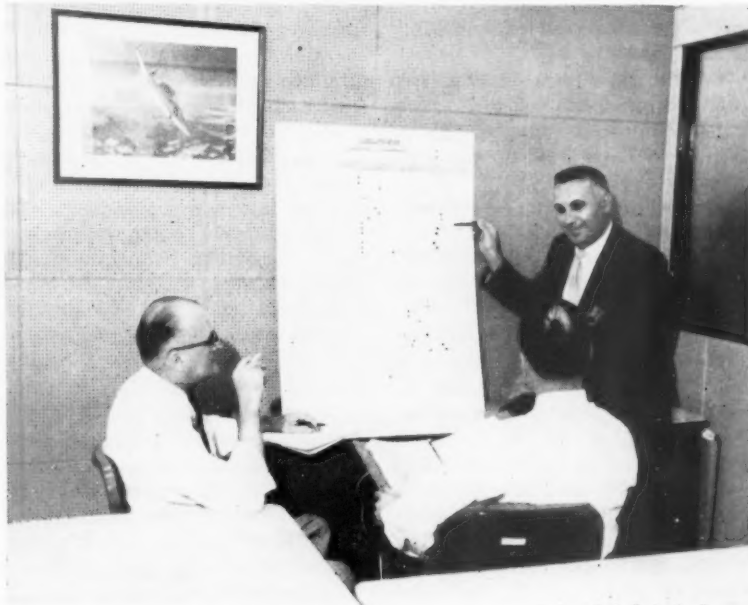
Need for "Generalists"

With a product-oriented organization, you get well-rounded people who know various phases of the product. For example, stators are handled by Materials Specialist D. C. Limbert. Mr. Limbert works with the engineers as they're conceiving new design

stators, keeps abreast himself of all changes in stator technology and develops sources with the specialized know-how needed in this field. Physically, practically all of the project engineers and the materials specialists are located within a hundred feet of each other. This helps promote the desired teamwork. The materials specialist knows what the engineer is planning long before there's any sort of a formal go-ahead. In fact, he often has already lined up preliminary quotations.

When over-all program is approved by management, the materials specialist is all set to buy. He doesn't have to wait for a requisition. All he does is figure out what his usage is from the bill of material and compute what his buy should be. He then simply issues the purchase order. The materials specialist's direct responsibility doesn't end with the placing of the order by any means. It ends only when the material is successfully used in an engine that has been completely approved and accepted by the Air Force. **Thus each materials specialist is really a small scale materials manager. He's got to determine his needs, make the buy, get de-**

Over-all procurement progress on a particular program is kept track of by special charts at J. E. D. Here H. J. Shirley, materials supervisor of the J-79 engine, reviews progress with Art Finn, materials specialist, and Howard Constable, programming control supervisor.



J. E. D.'s new organizational set-up helps stimulate close teamwork between materials and engineering personnel. Thrashing out a problem here are Tom O'Mera, buyer, and Dick Smith and Bill Gulick of engineering.

livery, control his inventory, minimize obsolescence, and keep on top of engineering changes so as to keep from getting caught short.

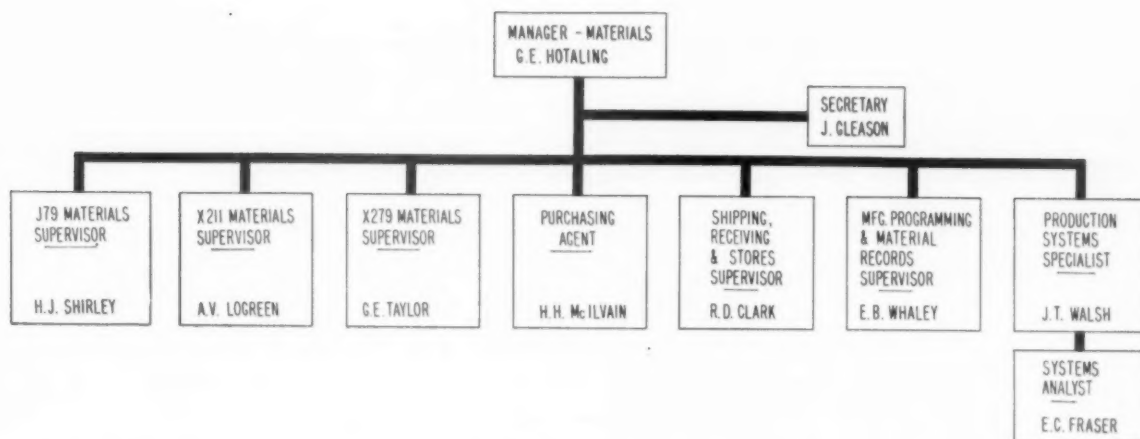
There are very few phases of the job of getting materials into an engine that the materials spe-

cialist or his assistant don't do themselves. They do, however, get reports on the progress of their parts through assembly and test from a special group under the project materials supervisor. And, of course, such activities as shipping, receiving, and stores are organized functionally under the materials manager. However, even though they do not physically move and handle their parts, the ultimate responsibility rests with the materials specialists.

Many Accomplishments

According to Materials Manager Hotaling, the reorganization has done more than just reduce overhead. The less complex set-up has helped improve inventory turnover, reduce obsolescence and has also meant fewer shortages. Engineers and materials specialists are able to get together and work out a lot of deals informally with little or no paperwork. In a more elaborate organization, this would be impossible.

Another big advantage of the new set-up is its flexibility. In the fast-moving aircraft industry, products become obsolescent at an accelerated rate. For contractors, this makes for constant shifts of personnel. *With a project-type*



The Jet Engine Department's current organization. Note that the only line activities that aren't organized on a product basis are shipping, receiving and stores and manufacturing programming and material records. Each materials supervisor has a group of materials specialists reporting to him.

materials organization, it's easy to take trained people from an older project and let them form the nucleus of a new project group. Materials specialists have much broader skills than either buyers or production control men. Consequently, they can more readily adapt to new products and new contracts. J.E.D.'s biggest contract right now is for the J-79 engine. But this engine will inevitably be superseded by others. As the J-79 phases out, it won't be too hard

to transfer people to new engine projects that are growing in importance. "The greater flexibility of our new set-up may ultimately prove to be its biggest advantage," says Hotaling.

More Decentralization

Because of its many advantages, Hotaling is so sold on the new set-up he's trying to broaden its scope. Currently the decentralized concept is applied only to

production parts actually used on engines. All the other buying is done by Purchasing Agent H. H. McIlvain's group. Purchases made for the over-all plant—factory and office supplies, etc.—can't be assigned to any particular product so they must be handled on an over-all basis with a more conventional purchasing organization. But a decentralized approach is still possible on a few items. And Hotaling is going to try it. For example, he's decentralized materials activities in facilities engineering and in central engineering.

Hotaling would like to have the materials function broken down as far as possible by product. This doesn't mean, however, that he wants to do away with the staff specialist. Currently, Mr. Hotaling has two highly specialized activities reporting directly to him. And he intends to keep them that way. E. B. Whaley is in charge of over-all manufacturing programming for all projects. Also reporting to Hotaling is J. T. Walsh whose specialty is systems. The individual project groups (e. g. the J-79 group under Harvey Shirley) each have their central purchasing services subgroups to keep files of key records, etc. These deviations from the general organization pattern are not, of course, inconsistent with Hotaling's philosophy of making the materials specialist a miniature materials manager.



Materials and services that can't be assigned to any specific engine project are bought by J. E. D.'s central purchasing group. Key personnel include, left to right, Harry Thomas, Purchasing Agent Howard McIlvain, Dick Klebe, Ernie Peters, and Joe Share.

Defining What to Buy

One of the most important aspects of purchasing is clearly specifying what it is that you want to buy. Here are some guides that will help you in determining how you should prepare your material descriptions.

By Stuart F. Heinritz

THE PURCHASING AGENT's basic function is to buy the hundreds of material items, product components, and operating supplies needed in the conduct of the business. Obviously, before he can do any part of his job, he has to know what is needed. And this information must come, in the last analysis, from the departments where the needs arise and where the purchased materials and supplies are to be used.

In the simplest terms of procedure, a purchasing transaction may start with a request or authorization to buy, setting forth the type and quality of item required in sufficient detail to provide the buyer with an adequate ordering description. This is the traditional requisitioning method that is still used, out of necessity, in most purchasing departments, but only to a very limited extent. For simple and elementary as this procedure would seem to be, it is cumbersome, inefficient, and unnecessary save in the exceptional cases of unusual, special, or initial requirements where there is no previous experience of usage or purchase.

The vast majority of material requirements in a manufacturing program are repetitive. The quantities needed and the rates of use may vary, though in most cases they can be anticipated fairly accurately on the basis of past experience and projected manufacturing plans. But the information as to the required and acceptable type and quality to be purchased does not present a brand new problem with each successive requisition. It can be, and for efficient purchasing it must be, agreed upon and set down as a matter of record in advance of the specific need.

The formulation of these material descriptions—the definition of what to buy—is very important to purchasing, and the purchasing department properly claims a share in this determination. While it is true that they define specific needs of other departments, which must be satisfied in order that those departments may meet their production and operating responsibilities, it is likewise true that they automatically set up specific purchasing requirements, and that purchasing too has a responsibility for good performance that is not measured solely by literal conformity with a specification. Effective purchasing performance depends largely on what the purchasing agent is asked to buy, what he asks the supplier to furnish. The definition is therefore a mutual concern of the user and the buyer, to be worked out together, for the two interests are not at all incompatible. If it can be written so as to satisfy the need and at the same time to make possible a buying advantage, everybody benefits. Here are a few of the basic principles to be applied.

The Criterion of Suitability

The writing of any material description starts with a need to be fulfilled. The order to the supplier will call for a specific item, but before the purchase comes to the ordering point, the problem is a functional one and should be approached from this angle. In almost every case there are a number of alternative products or methods or grades that will satisfy the need and do the intended job. Some may be better than others for the purpose, and some may be preferred by the

How Good Does It Have to Be?

That's the question every buyer should ask himself when he receives a requisition specifying the quality of the item to be purchased. When specified quality is in excess of actual requirements, it's wasteful purchasing. Yet this condition exists more often than it should. Frequently the fault starts in the engineering department where designers are accustomed to thinking in terms of using the best. But the "best" in many cases may be too good. If the buyer doesn't check to find out whether the quality specified is actually required, he's not doing his job. This of course does not mean that purchasing should pressure for use of material or items that are inadequate for the job, but buyers should make certain that they are not paying higher prices for something that's better than it has to be.

user, and these are certainly factors to be considered. Similarly, some will have the advantages of easier availability or lower cost, and these purchasing factors should be weighed with equal interest and care. When utility or suitability are equal, the purchasing advantages should be the deciding factor.

In purchasing science, the term "quality" denotes suitability for the purpose. This is tied in directly with the functional need. Any grade or quality that is inadequate for the purpose is of course disqualified from the scope of the material definition. But conversely, any costs incurred for quality in excess of the actual requirements for adequacy and suitability is sheer waste.

To state the purchasing objective as minimum quality consistent with the need is not to imply any downgrading of material or product, for the criterion of suitability has already set the low limit. "Minimum quality" unfortunately has a negative connotation. Actually it has the positive meaning of complete suitability, and this is the quality that belongs in the basic material definition. It does not preclude the procurement of superior quality, and the purchasing agent should constantly seek greater values. But to write unnecessarily high quality into the definition of the requirement is not only unrealistic in itself; it sets a requirement of uneconomical purchasing.

Fabricated Components

The principles outlined have been considered chiefly in reference to the common "bread and butter" items that, numerically at least, make up the bulk of the usual purchasing program. They apply directly to almost all of the non-product items and materials purchased, and to a majority of the general product materials and parts.

Fabricated components present a somewhat more complex problem, for the definition is fixed by blueprint and design and by the specification of materials that guides the supplier. But the principles of good specification and good purchasing can still be applied.

As before, we start with a functional need that determines the product type and quality to be purchased. Suitability is the first requirement. Here, suitability may have to be measured in terms of performance, and this may well be made a part of the purchasing specifications, as it frequently is in the case of plant production equipment. In the design of the component there is room for considerations of standard production methods, standard materials and parts. And if the volume warrants and the cost of dies or tooling is not prohibitive, it is still good buying policy to maintain alternative sources of supply.

Formal Specifications

In many manufacturing operations there are at least a few materials and components so important and basic as to require formal specifications to define and assure adequate quality. Formulation of these specifications is an engineering responsibility. But the purchasing agent will still want to ask a few questions about the specification that he has the responsibility of meeting in his buying.

Are the precision and tolerance requirements closer than necessary, adding cost without commensurate value? Has the principle of minimum quality for the purpose been observed?

Does the "tailor-made" specification call for a tailor-made product? Could it be tied in by reference to existing standard engineering specifications that would broaden sources of supply for greater availability without sacrifice of quality?

Does the specification include special features or proprietary details of design or composition that limit it to the product of a single manufacturer? If so, can these details be liberalized, or alternatives listed, so as to invite and make possible wider competition?

Are the specified methods of acceptance testing reasonable enough to avoid excessive inspection costs and rejections while still giving adequate assurance of quality? Can manufacturer's certification and warranties be relied on for this purpose?



PURCHASING **FOR MODERN INDUSTRY**

Have the specifications been drawn with a practical consideration of suppliers' production methods and problems, so as to make the business attractive to suppliers?

Have suppliers been consulted for their suggestions as to the practicability of the specification? Is the specification subject to review and possible revision on the basis of suppliers' recommendations?

The definition of material requirements, whether embodied in a formal specification or in a routine requisition, is a very important matter to the purchasing man. It is not his business to tell the plant and technical men what they want or should have. But by bearing in mind the need that prompts the request, and by contributing the benefits of his purchasing and market know-how, he can help to make that definition a better one. And that will help him to do a better job of purchasing to satisfy plant and production needs.

The Criterion of Standards

The second criterion that purchasing applies to the material definition is that of standard commercial practice, which largely determines the cost and availability of the item. A requirement may be defined so precisely as to become unique, and correspondingly difficult and expensive to procure, when there are standard items sufficiently close in every practical respect as to be entirely suitable.

The principle of standardization has been applied to the quality grading of materials, to the composition of chemical compounds and metal alloys, to the design and dimensions of all sorts of hardware and electrical products, so as to provide a wide range of selection suited to almost every general use. Such standard items are mass produced at minimum cost. They are quickly available from manufacturers' or distributors' stocks without the waiting time to get an order into the manufacturer's production schedule plus the actual production cycle. They are equally available from many alternative sources, increasing the reliability of supply and introducing the desirable element of competition. They permit operation on closer inventories and minimize the risk of loss through obsolescence. They eliminate the hazard and delays entailed by faulty shipments of special items which have to be replaced.

Any material description that does not conform to existing commercial and technical standards

should be questioned. Can a standard material or item be used for this purpose? There may be good reasons why this question must sometimes be answered in the negative, but in a surprising number of cases the answer will be "Yes", with no compromise of suitability, and resulting in a much more practicable and economical definition of the requirement from the purchasing viewpoint.

The Criterion of Alternative Sources

Often the simplest way to define a requirement and to order an item is by the manufacturer's brand name or catalog number. This is a perfectly good and acceptable practice except for one very important point. If such a definition is absolute, it binds the buyer to a single source of supply. A cardinal principle of good purchasing is selectivity, the ability to procure an item from alternative sources and to distribute his purchases among several suppliers if necessary to increase his assurance of supply and service and to maintain a competitive position.

Therefore the purchasing agent always seeks to modify such a definition by adding the words "or equal", and he promptly sets out to find alternative materials or products that will qualify under the broader definition and will give him scope for choice. There can be no logical objection to this purchasing policy and procedure so long as the words "or equal" actually mean what they say and the need is fully satisfied. The point at issue is who shall determine what qualities or products are equally suitable.

As indicated at the very beginning of this article, the ultimate responsibility for this decision lies with the using department. The procedure therefore is for purchasing to explore the market and to make its recommendations until, on the basis of test and trial, agreement is reached on one or more additional items approved as equally suitable and as acceptable alternates for the one originally specified. This may still be the preferred product, but it is no longer the only one acceptable under the "or equal" definition. The result is an "approved list" of acceptable items or suppliers, and purchasing is now free to select the source for any given order from this list and within the approved material description.

The Principle of Flexibility

A final point to be stressed in respect to the definition of material needs is that no such specification should be considered as permanently fixed. There is always the possibility that requirements or operating methods may change, and that the better way may be found. New products and new sources are constantly becoming available, and must not be overlooked. So both the need and the suitable materials should be under constant review to avoid stagnation and lost opportunities as technology, design, and customer preferences advance and change. But in this continuing review and analysis, the criteria of suitability and value are the same.



Why Not Make Orders Horizontal?

Mostly because of habit, 99% of today's purchase order forms aren't designed to promote easy follow-up. They can't be readily read without pulling them from a file and rotating 90 degrees.

EVERY DAY, thousands of buyers and follow-up men reach down into file drawers, pull out copies of purchase orders, turn them 90 degrees in order to read the information on them, then turn them back again and re-file them. But they don't do this at Ryan Aeronautical Co. in San Diego. Buyers can read the information on an order just by looking down at it right in the file drawer.

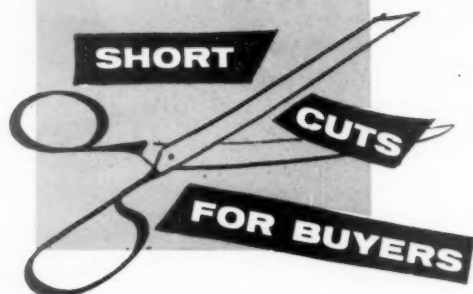
It's easier to read orders at Ryan because they're typed the way you read them—horizontally. So there's no need to pull orders from files and turn them 90 degrees to read them.

Why didn't someone think of this before? Why do 99% of the purchasing departments use vertical style orders that you can't file vertically? "There's a good reason for vertical orders," says Ryan's R. W. Carr. "In order to use the horizontal type, you've got to have typewriters with extra wide platens," he explains. "And, in our case, we also need typewriters equipped to handle our pin-feed forms."

Since most purchasing departments already have a substantial investment in the narrower platen typewriters, there probably won't

be any rush to get on the horizontal order band wagon. But the horizontal set-up is something to consider when planning the purchase of new typewriters. It's more convenient and costs nothing if you've got the equipment to handle the wider forms.

Ryan's purchase order form is made from an 8½" x 12" multilith master. Duplicate typing of basic information for receiving reports is eliminated by using a 3½" x 8½" master over the price column of the master.



Take the Hunch Out

Fig. 1

HEPPENSTALL COMPANY
PITTSBURGH 1, PA.

FROM: Pgh. Planning Department DATE: 7 November, 1957

TO: Pgh. Purchasing Department SUBJECT: Trial Hack Saw Blades.
(William Fitzgerald)

The following blades are sample blades left at our plant for trial purposes. All blades have been tried in the Machine Shop, Die Block and/or Shear Knife Departments. All blades have been tried under the same conditions, feeds, speeds and on general run of shop material, which are used on regular blades. These blades have been classed according to performance as follows:

NAME OF BLADE	LENGTH	NO. TEETH	PERFORMANCE
A	18"-21-24"	6-T - 4T	Good
B	18"	6-T	Good
C	18" - 24"	6T - 4T	Good
D	21" - 24"	6T - 4T	Good
E	18-21-24"	6T - 4T	Good
F	18" - 24"	6T - 4T	Fair
G	18" - 24"	6T - 4T	Fair
H	24"	4T	Fair
I	24"	4T	*Not acceptable
J	24"	4T	" "
K	18-21-24"	6T - 4T	" "
L	18-21-24"	6T - 4T	" "
M	18-21-24"	6T - 4T	" "
N	24"	6T - 4T	" "
O	18"	6T	" "
P	18"	6T	" "

*These blades, although not satisfactory for the variety of metal which we cut, could possibly be good for cutting softer metal.

There are two (2) other type of blades which we are trying, but on which data is not complete. These with the data which we now have are as follows:

Q	18"	4T	Good life and performance in Shear Knife.
R	24"	3T	Not as good as present blades on run of shop material. More complete data will follow.

E. E. Leiserer

EEL:va
cc: Gen. Mgr. Operations
Gen. Supt.

Typical report of tests made on new materials or products. Planning Department analyzes test results, then sends report to purchasing.

PURCHASING—if it's doing its job—should be the idea center in a company. It's expected to come up with new products, new materials, new techniques. Practically speaking, however, that isn't as easy as it sounds. The P. A. is always faced with the problem of not knowing for certain whether a new product or new material is really an improvement over what the company has been using.

Take the case of a vendor who comes in with a new type of grinding wheel. He makes an impressive sales pitch and the P. A. has a feeling that it may be just exactly what's needed. But—he can't be sure. He's not an expert on grinding wheels, so to a large extent he has to operate on hunch.

Result is that frequently nothing is done. Time, of course, is a factor. The P. A. just can't take the time to make a thorough investigation so he may file the data on the grinding wheel until he gets a chance to make an intensive study. He never gets that chance. Or, the P. A. may feel that he doesn't want to take the risk of trying something new. He's satisfied with the grinding wheels he's been buying—so why go out on a

By pretesting new products and new materials, the purchasing department at Heppenstall Co. is able to experiment with innovations it might normally pass over. The program is helping purchasing to do an imaginative, quality-oriented buying job.

of Buying

limb? There's some logic in this kind of reaction, but it isn't creative buying.

Pretesting Is the Answer

At Heppenstall Co., Pittsburgh, this problem has been solved to a large degree by pretesting on the production line. When a vendor comes in with a new product or new material which looks promising, purchasing places a small order. A memo is sent to the plant superintendent explaining that a sample quantity of the item has been ordered for test purposes. Another memo is sent to the planning department which has the responsibility for both analyzing the test results and making a report on the findings.

When the material or product arrives, the storekeeper is advised that it is for test purposes. He keeps a record of when the item is issued and the plant superintendent or foreman checks its performance on the production line. Aside from informing the key people who have to know that the item has to be tested, Heppenstall tries not to make a special case out of it. Every effort is made to treat the material as normally as possible.

Once the test has been completed, the results are sent to the planning department. The results are analyzed and a report of the findings is sent to purchasing. (See Fig. I). Purchasing can then decide whether to order the new item in production quantities or whether to drop it.

In addition, purchasing sends a report of the test results to the vendor with an explanation of

why the item has been accepted or rejected. (See Fig. II). Purchasing also sends a memo to the four other Heppenstall plant purchasing agents advising them of the test results.

As a result of this program, purchasing is able to do an imaginative, quality-conscious, buying job. The department can afford to take a chance without too much risk. In effect it's taken the hunch out of buying.



Fig. II.

Vendors whose products are tested by Heppenstall receive a written report on the results.

Local associations teamed up with Michigan State University in a cooperative effort. The result: an education program that can't be beat.

The Professor, The P. A. and the

education in
industrial purchasing
for business
personnel

TWO WEEKS
November 18-22
and December 2-6, 1957

PURCHASING SEMINAR

KELLOGG CENTER FOR CONTINUING EDUCATION
MICHIGAN STATE UNIVERSITY/EAST LANSING

General Information

Prominent purchasing agents and specialists from industry and the Michigan State University faculty will lead the two week seminar. A sound education in the fundamentals of industrial purchasing will be offered for those entering the purchasing field or for those who wish to review and expand their knowledge of purchasing. The seminar will be limited to twenty persons to provide ample opportunity for individual participation. Field trips and panel discussions will also be featured. The seminar will be of two weeks duration, November 18-22 and December 2-6, with the intervening week of Thanksgiving scheduled.

Program Topics

Purchasing topics such as the following will be covered: organization, specifications, standardization, quality and quantity control, sources of supply, supplier relations, business conditions, cost and price analysis, traffic, value analysis, legal aspects, salesman's viewpoint, scrap disposal, capital equipment, office management, reports to management, and purchasing research.

Sponsors

Purchasing Agents Association of Central Michigan/ College of Business and Public Service/ Continuing Education Service/ Michigan State University/ East Lansing

Facilities

The Seminar will be held in Michigan State's beautiful Kellogg Center for Continuing Education. This modern building contains housing facilities for participants as well as meal and meeting room accommodations. All classes except the field trips will be held at the Center.

Seminar Costs

Seminar fee	\$125.00
One-half twin-bed room per person per night	4.25

Group dinners on November 18 and December 6 are included in the fee. Other meals may be obtained in the Kellogg Center State Room or Cafeteria at a reasonable cost.

For Further Information contact:

Dr. John H. Hengland
College of Business and Public Service
Michigan State University

NEWS ITEM:

Kellogg Center for Continuing Education, on the campus of Michigan State University, will be the center of activity when a two-week Purchasing Seminar program begins on November 18.

What's behind this seminar makes it more than just a news item. It's a cooperative program to integrate theory and practice that may well be one of the best of its type in the country.

Michigan State offers, as a part of its business administration curriculum, an opportunity for students to major in purchasing. Judging by the job opportunities for graduates with this major, the Michigan State program is a big success. For graduate students there are also more advanced courses in purchasing and materials management.

Two other programs, an evening course and the new purchasing seminar, represent the cooperative effort of various local purchasing agents associations and MSU's College of Business and Public Service and its Continuing Education Service.

Associations Cooperate

For all of these courses, the local association members cooperate. At the last session of each class, members give a talk on some practical aspect of purchasing. The associations also provide field trip programs for purchasing students, contribute to a scholarship, and invite professors who teach purchasing to district conferences. One association has honored an associate professor at

Program for the seminar shows wide variety of subjects covered.

Kellogg Center for Continuing Education extends its educational facilities to 60,000 people each year, accommodates 400 educational conferences.



Purchasing Profession

MSU by appointing him co-education chairman, which carries with it a membership on the board of directors.

Michigan State:

Provides purchasing graduates for business.

Offers basic and advanced courses in purchasing for purchasing personnel in the Lansing, Saginaw, Grand Rapids and Berrien Harbor areas.

Provides facilities for some of the local association meetings plus certain district meetings.

Pays staff members' N.A.P.A. memberships plus some of their expenses for research and travel.

Fortunate indeed are the Central Michigan association and the university to have a young associate professor of management, Dr. John H. Hoagland, whose enthusiasm for purchasing knows no bounds. To the success of the cooperative program he contributes his time, research, vigorous leadership and a background of business and education that reads like "Who's Who in America." "I can not over-emphasize," says Dr. Hoagland, "the need to develop competent faculty personnel in all areas of business, and particularly in the area of purchasing."

Top Notch Teacher

When local associations and universities get together for a cooperative program of purchasing education, the question invariably arises, "Who should teach the course?" Some associations have felt purchasing agents should teach purchasing courses. Dr. Hoagland comments on this: "It

seems to me that our best approach is to help educate the teachers or professors who are making education their life career. They, in turn, should carry a much more lasting and greater interest in the field than the purchasing agent, whose main occupation is not teaching. This obviously takes time, but I believe it is for the greatest good in the long run."

The purchasing seminar is the

newest venture in the Michigan State-local association cooperative programs to bring a sound education in industrial purchasing to those entering the purchasing field or those who wish to review and expand their knowledge of purchasing. Experience in such programs will lead to progressively better ones, for there's an atmosphere of purchasing here that's hard to beat.



Michigan State's Beaumont Tower
—symbol of higher education.



Purchasing Agent Leonard Butters, Union Steel Products Company, Albion, Michigan escorts a group of M. S. U. students on a purchasing field trip.

Contract Stipulations Sometimes Limit Seller's Liability

If you buy something that's defective and it damages someone, who's liable—you or the manufacturer? The answer depends on the contract stipulations.

by Albert Woodruff Gray

PRINTED ON the face of invoices of a manufacturer of oil well equipment was, "Under no circumstances are we responsible for any damages beyond the price of the goods. No damages or charges of any kind either for labor, expenses or otherwise, suffered or incurred by the customer in repairing or replacing defective parts or occasioned by them, will be allowed."

This disclaimer of liability followed the statement, "All goods and materials are carefully tested and inspected before leaving the point of manufacture. The only guarantee that is given by us or for which we are in any way liable is to replace such goods as prove defective when used for the purpose for which manufactured f.o.b., at point of delivery to carrier of goods being replaced or allow credit for such goods at our option."

For use in sinking sixteen wells in southern California to a ten thousand foot depth an oil company purchased from this manufacturer double suspension plugs. These plugs from which is suspended the oil well tubing, are a

doughnut shaped outer plug tapered on the outside to fit the tubing head and on the inside to hold a smaller tapered plug which in turn is screwed to the top of the tubing. Three of these plugs failed to hold and in each instance the tubing dropped to the bottom of the ten thousand foot well hole.

Limited Liability?

In its defense to the suit by this oil company for damages the equipment manufacturer set up this written limitation of its liability.

In affirming a judgment against the manufacturer the California court said of disclaimers of this character,

"In cases where the public interest or some statutory prohibition are not involved it is permissible for a party to contract to absolve himself from liability for future negligence. Nevertheless the law does not look with favor upon attempts to avoid liability or secure exemption from one's own negligence and such provisions are strictly construed

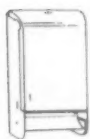


WITH THE PROPER CONTRACT STIPULATION, IT'S POSSIBLE FOR A SELLER TO SOMETIMES EVEN EXEMPT HIMSELF FROM HIS OWN NEGLIGENCE.

Dollar-wise buyers
save money with

NIBROC®

THE BALANCED TOWEL



You can save money with any Nibroc towel. With Nibroc in the natural shade, of pure cellulose fibre... in multi-fold and single-fold. With Nibroc white, in the new "white magic" finish... in multi-fold and C-fold.

Perfect balance in absorbency, wet strength, softness, reduces waste—lowers cost. New delayed action dispenser cuts usage—up to 20%. When bought with Sofwite® and Softan® Toilet Tissue the unit price is less. Result: Even more savings! Ask, too, about Nibroc industrial wipers, windshield wipers, cabinets.

Look under "Paper Towels" in Yellow Pages for name of nearest distributor. Or, write Dept. GN-2, Boston.



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Mills: Berlin & Gorham, New Hampshire

against the person relying upon them. It is also well settled that a document is to be construed strictly against its drafter."

Then referring specifically to the provisions disclaiming all liability endorsed on the invoices, the court added, "In the event imperfections in the goods escape detection despite careful testing and inspection the language announces that the manufacturer's responsibility shall be restricted to replacement of the defective goods or the amount of the purchase price."

"In short, having warranted that its goods are carefully tested and inspected and no specific disclaimer of express or implied warranties appearing, this language is clearly designed to protect the manufacturer from the measure of damages flowing from breach of warranty by limiting its liability to the price of the goods sold. But the manufacturer's liability in the instant case is predicated not alone on breach of warranty but on negligence, which proximately caused the damage here sustained."

"The main problem is whether there is any clear indication that the manufacturer was attempting to shed its ordinary responsibility to a customer by exempting itself from the consequences of its own fault."

"The language falls far short of manifesting that it was the intent of the parties that the manufacturer was to be relieved of its own negligence. Certainly there is no mention of negligence nor a clear and explicit indication that

It's legal for a seller to make provisions limiting his liability for negligence. However there are restrictions on what the seller can state in the provisions: the law wants to protect others against unreasonable danger.

the manufacturer was attempting to relieve itself from the consequences of its own fault. As author of the words employed the manufacturer had it in its power to relieve itself from all obligations or liabilities including that of negligence by the use of proper language."

Buyer Liability

In contrast to the circumstances surrounding this sale and use of oil well equipment is a recent decision by the Supreme Court of New York State. It involved the sale of electrical equipment in which there had been surcharged in red ink across the face of the orders, "Read carefully conditions on back of this order," with the further direction, "Furnish and deliver materials billed, subject to conditions on the back of this order."

On the back of the order was endorsed, "In consideration of this order the seller agrees to save us harmless from all claims for personal injuries on the part of himself or his employees while on our premises in carrying out the work called for herein whether or not such injuries are attributable to our negligence."

In repairing a steamship alongside the premises of the purchaser

a workman was injured. Here the purchaser of this equipment set up this release in its defense. In its decision that the purchaser was absolved of any liability for damages for the injury of this workman which under this agreement were chargeable against the seller, the court said,

"It is a general principle of law that a person may by agreement exempt himself from his own negligence, the only requirement is that the language of the agreement must be clear and unequivocal. This is plain, clear and unambiguous language and must be given a plain meaning."

In another instance a limitation of this character was contained in a contract for the purchase of a motor coach. When suit was brought for damages from a fire when the gasoline tank became free of its supports, dragged on the ground and was ignited by a spark from contact with the pavement the manufacturer interposed the provision in the purchase contract.

Liability Under Warranty

"Standard Warranty. We warrant each bus manufactured by us to be free from defects in material and workmanship under normal use and service. Our obligation under this warranty being limited to making good at our factory any part or parts thereof, including all equipment or trade accessories except tires, supplied by the truck manufacturer, which shall within 90 days after making delivery of such vehicle to the original purchaser or before such vehicle has been driven 4,000 miles, whichever event shall first occur, be returned to us with transportation charges prepaid and our examination shall disclose to our satisfaction to have been thus defective, this warranty being expressly in lieu of all other warranties, express or implied,

REFERENCES

Basin Oil Co. of Cal. v. Baash-Ross Tool Co., 271 Pac. 2d 122 California, May 28, 1954

Paddle v. Atlantic Basin Iron Works, 91 N.Y.S.2d 336, New York, June 2, 1949

Shafer v. Reo Motors, 108 Fed. Suppl. 659, Pennsylvania, December 3, 1952

Fire Association of Philadelphia v. Allis Chalmers Mfg. Co., 129 Fed. Suppl. 335, Iowa, March 14, 1955

Getting more service hours per dollar

HOW TO BUY FLEXIBLE METAL HOSE

3 simple steps can help you select metal hose for best results and longer service life

The important job of selecting the *most economical*, the *one right* flexible metal hose for your product or transfer problem can be greatly simplified by following these 3 steps:

1 Send exact specifications

Complete and exact statement of operating conditions will go far in saving you money on flexible metal hose.

First, it assures you that the connector you get will live up to your expectations. And, second, that manufacturers won't bid on hose that's "over-engineered." You'll save in the long run because you'll get the right assembly for every job.

Here is the information we need before we can give you our best suggestions:

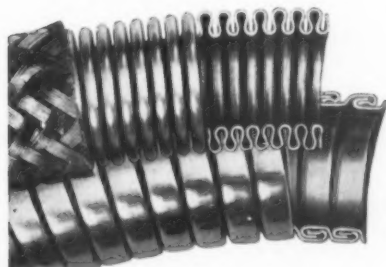
A PHYSICAL REQUIREMENTS:

- 1) Over-all length (including fittings)
- 2) Diameter (I.D. and O.D.)
- 3) Fittings—size, type, style of thread
- 4) Tolerances permitted
- 5) Quantity required

B OPERATING REQUIREMENTS:

- 1) Material to be conveyed
- 2) Operating pressures—is there shock?
- 3) Operating temperatures
- 4) Movement—lateral and longitudinal
- 5) Vibration conditions?
- 6) Expansion and contraction requirements?
- 7) Corrosive atmosphere?

Send sketch of proposed installation if available.



BASIC TYPES

CORRUGATED and STRIP-WOUND. In a wide range of sizes and styles in any workable metal: Bronze, Brass, Aluminum, Stainless Steel. Various fittings.

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Many standard connectors have been developed to meet problems common to many finished products—i.e., vibration. Often a standard metal hose will answer your needs as well as a special item could. We can often save you money if we know operating requirements.

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When selecting or specifying flexible metal hose, you'll find American's staff of trained engineers of invaluable assistance. Their advice and suggestions may help you solve or avoid many costly problems.

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Please send me your free, 60-page Catalog G-560 containing basic information on all types of metal hose and tubing, fittings, etc.

NAME & TITLE

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CITY, ZONE, STATE

and of all other obligations or liabilities on our part and we neither assume or authorize any other person to assume for use any liability in connection with the sale of our vehicles."

In a recent decision of this action the Federal Court ruled that in spite of the negligence of the manufacturer no lawsuit could be maintained in the face of this contract provision.

"In making the warranty the seller may put any limitation he chooses on the character of the warranty or the time during which it is to remain in effect and the measure of his responsibility on the warranty is fixed by its terms.

"Where a vehicle is sold under a limited warranty the purchaser cannot insist on any warranty other than that expressed in the contract, so a contract providing for certain warranties and expressly excluding all other warranties express or implied, has been held to exclude any warranty that an article sold shall be fit for a particular purpose intended by the purchaser.

"Since no lawsuit can be maintained in this instance for breach of an implied warranty by reason of the excluding provisions contained in the purchase agreement, the purchaser must recover, if at all, on the ground of negligence. There is no doubt that there is set forth actionable negligence. The only question is whether the seller could and did by its contract relieve itself of liability for negligence to this particular buyer."

In conclusion the court said, "There is no rule of public policy which invalidates provisions limiting liability for negligence or otherwise, as between the buyer and the seller. The buyer is under no compulsion to buy from a seller. And if the buyer desires to buy from the seller the buyer has a choice of accepting the seller's terms or going elsewhere. It is my judgment that the provision of the 'Standard Warranty' expressly releasing the seller from all other obligations or liabilities on our part' is all inclusive, embracing any claims which might

arise either for breach of warranty or breach of duty based on negligence."

A Recent Case

In a suit before the Federal Court in Iowa for decision a few months ago, brought against the Allis Chalmers Mfg. Co., it was claimed that this company was liable for injuries suffered by an employee of the Iowa Public Service Company in the operation of switch gear equipment, which had been installed by the company.

This contract provided in part, "The liability of the company arising out of the supplying of said apparatus or its use, whether on warrants or otherwise, shall not in any case exceed the cost of correcting defects in the apparatus as above set forth. The company shall not in any event be liable for indirect or consequential damages."

In its decision the court said of the exceptions to this rule permitting agreements for the absolution from liability for negligence, that,

"A bargain for exemption from liability for the consequences of negligence, not falling greatly below the standard established by law for the protection of others against unreasonable risk of harm, is legal.

"A bargain for exemption from liability for the consequences of a wilful breach of duty is illegal and a bargain for exemption from liability for the consequences of negligence is illegal, if

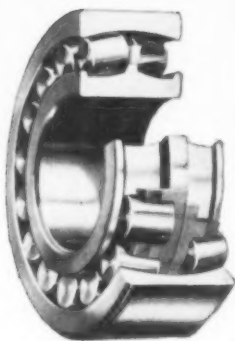
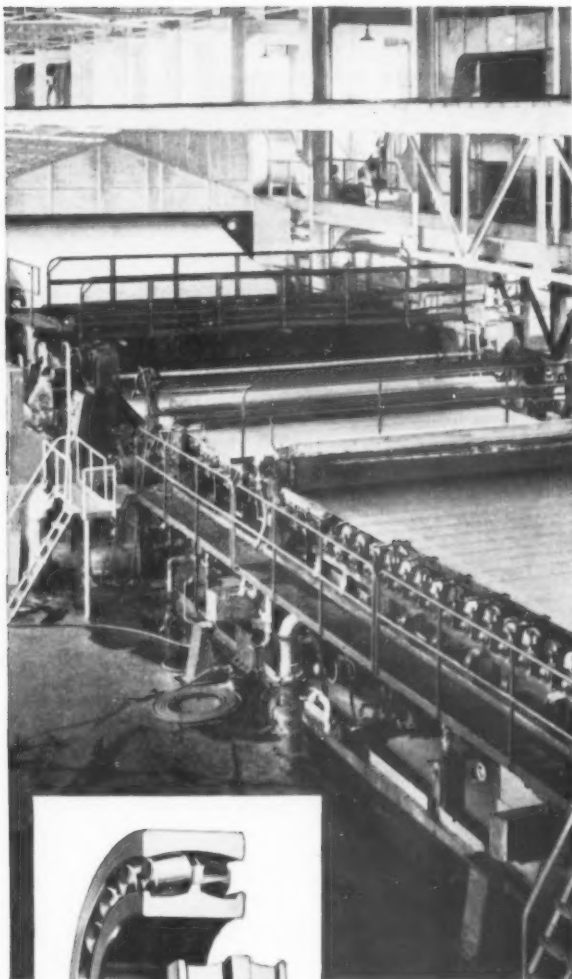
(a) The parties are employer and employee and the bargain relates to negligent injury of the employee in the course of the employment.

(b) One of the parties is charged with the duty of public service and the bargain relates to negligence in the performance of any part of its duty to the public for which it has received or been promised compensation.

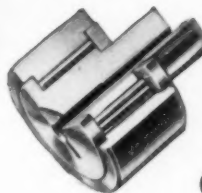
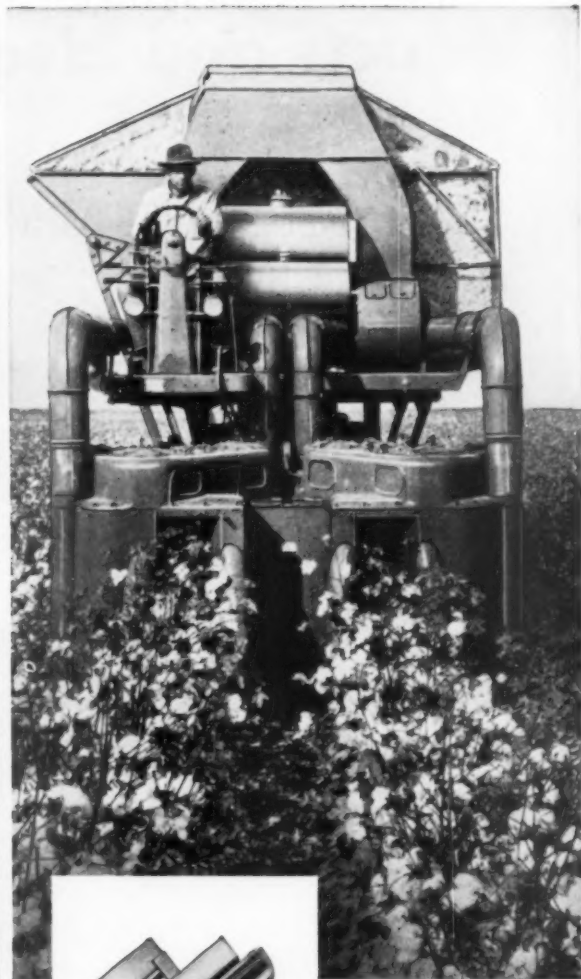
(c) A bargain by a common carrier or other person charged with a duty of public service limiting to a reasonable agreed valuation the amount of damages recoverable for injury to property by a not wilful breach of duty, is lawful."



"Just sign the dotted line, sir, and I'll get out of, er . . . your hair."



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paper mills...



to
cotton pickers

Torrington makes the right anti-friction bearing for every basic need!

It may be self-aligning Spherical Roller Bearings in a paper machine producing record tonnages. Or compact, high-capacity Cam Follower Needle Bearings activating the intricate mechanical fingers that take the back-breaking work out of cotton picking.

Between these two examples lie all kinds of requirements. To meet the broad range of needs, Torrington makes every basic type of anti-friction bearings.

This wide range of experience enables you to rely on Torrington for engineering recommendations based on your specific application requirements. Your Torrington representative has valuable experience—rely on him for assistance. **The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.**

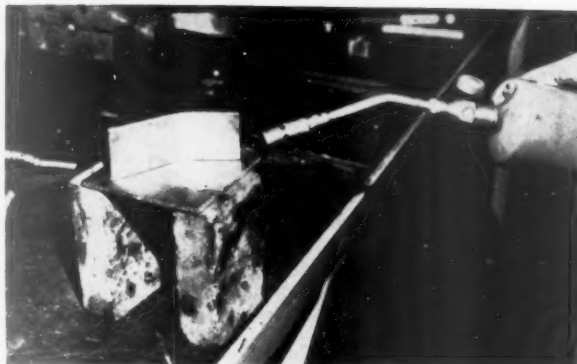
TORRINGTON BEARINGS

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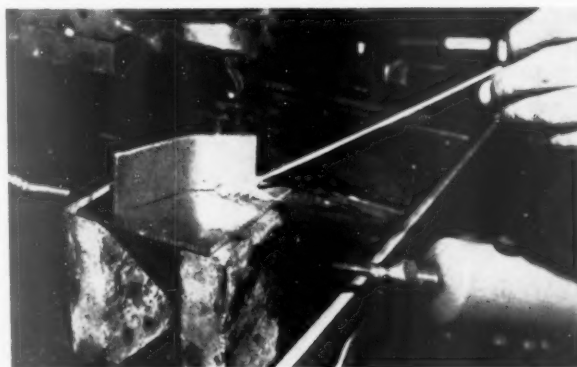
SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

Products and Ideas

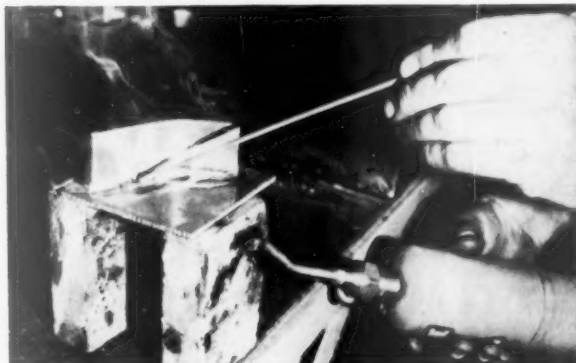
New Concept in Metal Joining



Manual joining of two pieces of aluminum sheet is begun by heating area surrounding joint to 810 F.



InterAct wire is moved along the interface of the joint. Reaction temperature is below melting point.



Seconds after reaction temperature is reached, the reaction is completed. Joint is then washed off.

IT IS now commercially feasible to join non-ferrous metals to each other at low temperatures. A new non-ferrous metal joining material and the process by which it is used makes this possible. The joining material, called InterAct, is a product of Intertectics, Inc., Bedford, Ohio.

The joining process does not involve welding, soldering or brazing. However, it creates a permanent metallurgical bond which in most cases is stronger than the metal being joined. The process forces actual chemical ion exchange between the metals.

The metals being joined don't have to be similar in type or analysis.

Since the reaction takes place at a temperature lower than the melting point of either metal, deformation is held to a minimum.

Chemically, the joining material is a reaction eutectic. A reaction eutectic is a material which, when heated, in contact with similar and dissimilar metals, reduces the surface oxide layer of the metals and causes them to flow together at temperatures lower than the melting point of either metal.

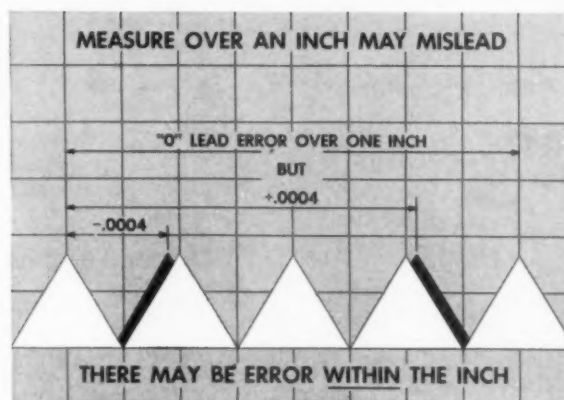
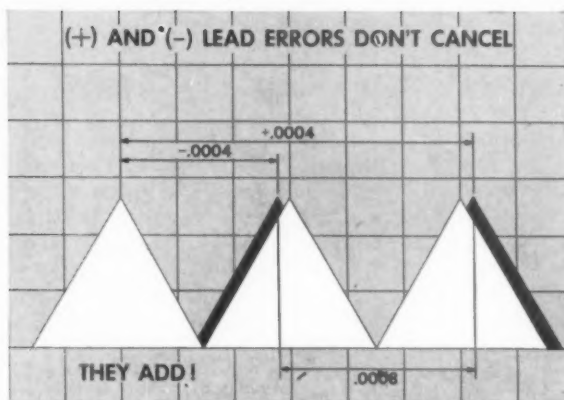
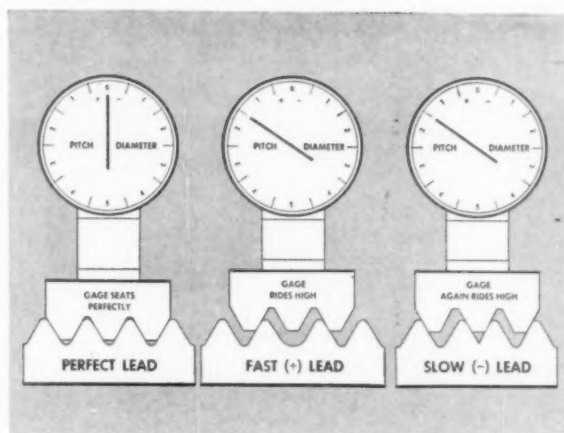
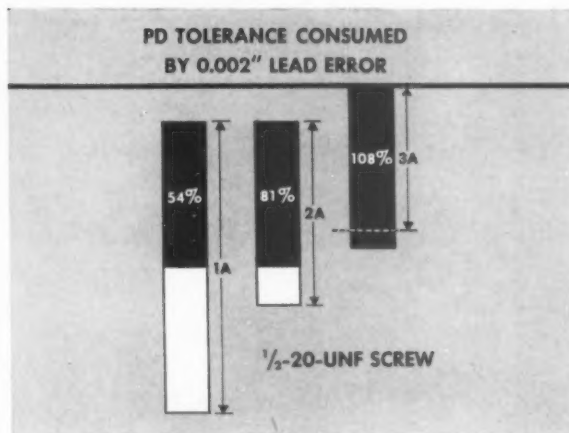
The joining material forms a permanent joint between all non-ferrous metals (excluding those which have high silicon or nickel contents) and certain metals in the so-called "rare earth" family.

Joining can be done manually or automatically. Manual joining of two aluminum sheets is shown here.

Write No. 30 on Inquiry Card—Page 32



The completed joint represents an actual chemical union between the two pieces of aluminum sheet.



Typical illustrations from new SPS booklet show effect of lead error on PD tolerance, explain why plus and minus errors do not cancel and why lead error is not necessarily progressive.

Lead error: what it is; how to detect it — new SPS booklet tells all

A lead error of only .002 in. within length of thread engagement increases the effective diameter of a Class 3A 1/2-20 screw so that it will not go into its tapped hole. Smaller errors in lead—say .001 or .0005—can play equal havoc with the smaller diameter screw threads. Lead error accounts for over 50% of today's thread assembly problems, causing rejects, production delays, and excessive wear on power wrenching tools.

SPS has prepared a new booklet on this important but little-understood subject that should be helpful to anyone making, buying or using threaded fasteners. It explains the anatomy of lead error, its mathematics, its common causes, and the means for detecting and preventing it. Exposed are such fallacies as the theory that plus and minus lead errors cancel (they add) or that most lead error is progressive (it's mainly erratic).

All SPS UNBRAKO socket screw products are made to a true Class 3A fit with precisely controlled lead. Complete stocks

are carried by industrial distributors. Unbrako Socket Screw Division, STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.



Form 2294: "A New Look at Lead Error—Thread Tolerance Thief No. 1." 16 pages with many illustrations. Write for free copy today.

We also manufacture precision titanium fasteners—
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15 Factories • 42 Sales Offices

For More Information Write No. 211 on Inquiry Card—Page 32

Products

Tool Mist Unit Increases Cutting Life



A mist coolant system is available for use on drill presses, lathes, grinders, milling machines or other types of machines that require a coolant. It has a control valve with needle adjustments to regulate the flow of both air and liquid. Manufactured by Wesco Tool & Mfg. Co., 2820 San Fernando Blvd., Burbank, Calif., the system makes it possible to apply coolant in combination with air in such a way that the coolant dissipates in the air, eliminating need of a coolant pan. This has opened a new field for dry operation machines.

Write No. 31 on Inquiry Card—Page 32

Long-Wearing Flooring Material



An extremely tough, long-wearing, trowel-applied flooring material is available from Selby, Battersby & Co., 5210 Whitby Ave., Philadelphia 43, Pa., in 9 colors and more than 40 formulations. The material is a laboratory controlled formulation of mag-

(Please turn to page 102)

For More Information Write No. 212 on Inquiry Card—Page 32→

PURCHASING



INSTRUMENTS
TOOLS TRANSPORTATION
DEFENSE

Screw Threads

COMMUNICATIONS
APPLIANCES
MACHINERY

Without **SCREW THREADS** not one of these products for modern living would be possible. And, only *taps* generate internal screw threads with the speed and precision demanded by modern production methods.

But, today your precision tapping jobs cannot be entrusted to *just any tap*. Your taps must be backed by precision engineering, precision measuring tools and time earned know-how. There is a big difference in using *just any taps* and using **TAPS** by **GREENFIELD**.

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CD F PLASTICS AND FIBRE

CD F PRODUCTS OF TEFLON

CD F produces an unequalled range of electro-mechanical parts of Teflon*—such as spaghetti tubing, glass-based laminates, flexible insulating tapes, sheets, rods, tubes, and finished parts. Now also available: cementable Teflon in supported and unsupported forms; can be cemented to itself and to most other materials with commercial adhesives. If you have a potential use for a product made from unsupported or reinforced Teflon—from tapes to high-heat-resistant printed-circuit laminates—your CD F sales engineer is the man to call. Meanwhile, write for the new CD F Teflon Folders.

*duPont trademark for its tetrafluoroethylene resin

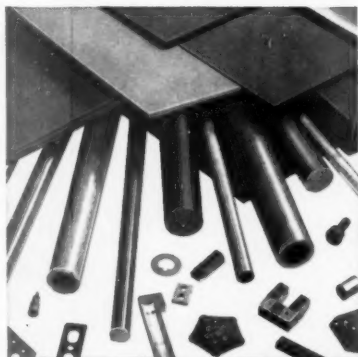
Heart of the best printed circuits—

CD F METAL-CLAD LAMINATES

Printed-circuit dependability begins at the base, and that's where CD F excels. Only CD F offers the combination of Teflon* resin and woven glass cloth for use under sustained temperatures of 200° C. In addition, CD F offers a full range of metal-clad laminates to meet every known demand of printed circuitry. High foil-bond strength withstands soldering heats, reduces assembly rejects. Full line of metal-clad grades—woven-glass and paper-base—with Teflon*, epoxy, and phenolic resins. Assembly costs go down when the job is done on CD F Metal-Clads! Write for CD F Metal-Clad Folder.

*duPont trademark for its tetrafluoroethylene resin

CD F DILECTO LAMINATED PLASTICS



for electrical and mechanical applications

DILECTO®, made in scores of grades, is the highest-quality laminated plastics made for rigorous duty in electrical, electronic, and mechanical equipment. Characteristics vary with the grade, so get the expert assistance of your CD F sales engineer.

Resins available in Dilecto:

Phenolic	Epoxy	Polyester
Silicone	Melamine	Teflon*

Bases for Dilecto:

Woven Glass Fabric	Glass Mat
Woven Nylon Fabric	Asbestos Mat
Woven Asbestos Fabric	Cotton Mat
Woven Cotton Fabric	Paper (either cellulose or asbestos)

CD F gives fast technical and delivery service on sheets, tubes, rods, or complete fabricated parts of Dilecto plastics. Write for Catalog D-55-B.

*duPont trademark for its tetrafluoroethylene resin



**PLASTICS
FABRICATION
BY CD F SAVES
YOU TIME,
MONEY, WORRY**

Let CD F's well-equipped machine shops assume the complete responsibility for delivery of plastics and/or fibre parts on time and as specified. No time is lost at CD F between raw-material production and final fabrication; in fact, special production runs are often scheduled to coincide with machining, to save the customer money on finished parts. When you let CD F do it for you, there's no problem of shortages, rejects, waste. Undivided responsibility pays off for you!



**CD F HIGH-HEAT
ELECTRICAL
TAPES**

Flexible insulating tapes for hand or automatic winding, made of silicone rubber, silicone varnish, Teflon*, and Micabond, with and without backings. Color identification—CD F tapes of unfused Teflon are made in twelve colors for circuit identification. Call your CD F sales engineer, or write for test samples.

*duPont trademark for its tetrafluoroethylene resin

PURCHASING NEWS



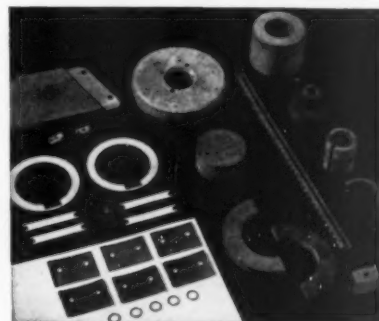
DIAMOND VULCANIZED FIBRE

keeps costs down

Known for over sixty years as the standard of quality in fibre, Diamond® Vulcanized Fibre is made in many grades (bone, fish-paper, trunk, commercial, built-up) and is available in sheets, rods, tubes, strips, rolls, or formed specialties. Write for Catalog DVF-55.

LOW-COST VULCOID Resin-impregnated Fibre.

Vulcoid (made only by CDF) combines the desirable electrical properties and mechanical adaptability of vulcanized fibre with the great moisture-resistance and dimensional stability of phenolic laminates. UL-approved as Class A insulation in electronic equipment. Write for Bulletin V-55.



CDF CELORON MOLDED PRODUCTS

Celoron is a molded-macerated and/or combination laminated base bonded with phenolic resins. High strength, long life, and low cost are the characteristics of molded electro-mechanical parts made from CDF Celoron®. Its good electrical properties make Celoron an ideal molded insulator, while its high mechanical strength makes it an excellent material for gears, couplings, intricate static-free loom parts, etc. Get samples and Catalog C-56 by writing to CDF or asking your CDF sales engineer.

For a better motor or generator—

CDF MICABOND INSULATING PARTS

CDF mica V-rings and slot liners insulate America's best-selling motors and generators. Finest-quality mica splittings insure highest heat-resistance and insulation under severe operating conditions.

Forms of Micabond® available: Sheets; Tubing; Tapes (with backings of cotton, silk, paper, woven glass, and Mylar polyester film; Fabricated Parts of various shapes. CDF supplies and fabricates Micabond to your strictest specifications—on time and at low cost. Call your CDF sales engineer or write for samples of Micabond and Catalog M-55.

IduPont trademark

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CANADA, LTD.
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CONTINENTAL-DIAMOND FIBRE

A SUBSIDIARY OF THE ~~Bruck~~ COMPANY • NEWARK 41, DELAWARE

For More Information Write No. 213 on Inquiry Card—Page 32



The cause of a big failure is often very small.

The live fibers in Western felts resist wear, age, and weather. They never fray or ravel. As long as your machine lasts, they will be there, performing faithfully.

Felt carries only clean filtered oil to all bearing surfaces. Used as a seal, felt keeps oil *in*, and dust *out* . . . permanently.

Our 57 years of experience is ready to help you. Your inquiry will place one of our Sales Engineers at your service. Write today.

NOTHING PROTECTS MOVING PARTS LIKE FELT

WESTERN *Felt* **WORKS**

4021-4139 Ogden Ave., Chicago 23, Ill.



Branch Offices



in Principal Cities

MANUFACTURERS AND CUTTERS OF WOOL FELTS

For More Information Write No. 214 on Inquiry Card—Page 32

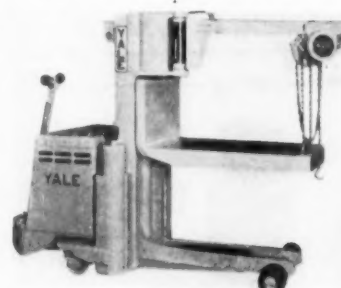
Products

(Continued from page 98)

nesium oxychloride cement. It provides durable, resilient, slip-resistant floors in industrial plants, warehouses and other establishments. It can be applied over wood, concrete or steel and is an economical flooring material for both new installations as well as for resurfacing old floors.

Write No. 32 on Inquiry Card—Page 32

Attachment Integrates Truck with Conveyor



A rider-walker lift truck with an attachment to integrate the unit with conveyor lines carrying bulky, fragile materials is on the market. The unit is a high lift platform equipped with a swinging boom. Attached to the boom is a one-half ton capacity hoist. The boom slews through 180 degrees, permitting positioning of the hoist over a conveyor line on either side of a truck. The Materials Handling Division of Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia 15, Pa., developed the attachment.

Write No. 33 on Inquiry Card—Page 32

You need only one card to request additional information on any item in this issue. Use the reader service page 32.

Inspection Glass Magnifies Three Times



A newly introduced spectacle loop, called the 3 D 3 Opticaid, is designed for industrial use where high magnifying power at a comfortable working distance is wanted for inspecting production output, precision parts or examining delicate operations—all at convenient arms length with both hands free to work. It magnifies 3 times and has separate lenses for each eye. It gives greatly magnified vision in three dimensions with needle sharp clarity. The manufacturer is Edroy Products Co., 480 Lexington Ave., New York, N.Y.

Write No. 35 on Inquiry Card—Page 32

Machine Accurately Cuts Off Tubing



Walter P. Hill, Inc., 22183 Telegraph Rd., Detroit 19, Mich. has designed a fully automatic cut-off machine to produce accurate, burr-free lengths of non-ferrous tubing at extremely high production rates. For example, it will cut off 7" lengths of 2" diam copper tubing at the rate of 2,000 pieces an hour. The length dimension on the cut-off parts is consistently held to within less than 0.010". Additional attachments for the machine provide

(Please turn to page 106)

FEBRUARY 3, 1958

want better

- HEAT RESISTANCE
- ARC RESISTANCE
- STRENGTH & WEAR RESISTANCE
- STABILITY

in molded electrical parts?



Today's new Ace Hard Rubber compounds are far more than "just good insulators" in electrical-mechanical parts. Look at these representative values: Tensile strength to 10,000 psi, moisture absorption as low as 0.04%, power factor 0.006; arc resistance as high as 190; dielectric strength to 600 v/mil; surface resistance over 10^8 megohms; heat resistance to 300 deg. F. Compounds can be blended to give just the right combination of properties for each job...economically, too, because it's never necessary to "over-design." Practically any size and shape can be molded, even with complicated inserts. Machinable to close tolerances, with excellent dimensional stability. Why not check up on today's new compounds for your designs?

ACE[®] dielectrics:

High dielectric sheet and extruded shapes ideal for myriads of punched or machined parts.



Design hints covering wide variety of Ace hard rubber, Ace plastics, and rubber-plastic blends are available in 80-pg. Ace Handbook. Write for your copy today.



ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY
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For More Information Write No. 215 on Inquiry Card—Page 32

REPUBLIC Office Equipment Sets



Beautiful Finish Resists Marks and Scratches for Over-the-Years Economy

Republic Office Furniture stands up under toughest conditions of service. And because it is made of *steel*, it offers many advantages in durability, efficiency, convenience . . . and it is styled in steel for beauty and comfort.

Republic Office Furniture is strong, sturdy, rigid. It combines smart styling and design with simple construction. Full-formed rolled edges are attractive, eliminate the tragedy of snagged hosiery and splintered fingers.

And Republic Office Furniture has an especially hard finish that resists marks and

bumps. The handsome finish will not peel, chip or flake. Standard finishes are Platinum Gray, Willow Green, Sahara Beige as well as Neutral Olive Green, Walnut Grain and Mahogany Grain colors.

Republic Office Furniture is made by Republic's Berger Division with nearly 75 years of sheet steel manufacturing experience. For greater office equipment service, economy and satisfaction . . . call your nearest authorized Republic-Berger Office Furniture dealer—or send coupon today.

REPUBLIC



World's Widest Range of Standard Steels

BERGER DIVISION

the Style in Steel and Service



REPUBLIC TRANSFER CASES offer businessmen everywhere safe, compact, easy to use storage for inactive records. Heavy-channel frame, reinforced drawer heads, all-welded steel construction and a full 25 $\frac{1}{2}$ inches of clear filing space.



REPUBLIC STEEL DISKS are handsome, smart, with sleek graceful lines, exclusive tapering pedestals and "eye-comfort" top. Stick-proof drawers slide silently on nylon glides. All-welded construction assures maximum durability and long life. Available in a variety of sizes for executive, secretarial and all purpose applications in choice of popular enamel finishes.



REPUBLIC FILING CABINETS are available in a wide range of styles and sizes to meet any office filing requirement. Drawers coast on cradle type progressive ball-bearing suspension slides. All steel construction withstands exceptionally hard use. See your dealer — or send coupon today.



REPUBLIC LIBRARY STEEL SHELVING is dependable, sturdy. It offers convertible convenience. Shelves can be adjusted to any book height. Other Republic Steel Shelving for laboratories, workshops, commercial and manufacturing areas. Send coupon for more information.



REPUBLIC STEEL LOCKERS protect the valuables and personal belongings of employees at work in offices, factories, industrial plants. Bonderized finish offers economies and savings in minimum maintenance care. Available in many types and sizes for every conceivable storage requirement.

STEEL

and Steel Products

CANTON 5, OHIO

REPUBLIC STEEL CORPORATION

DEPT. C-4620

3134 EAST 45TH STREET • CLEVELAND 27, OHIO

☐ Desks ☐ Transfer Cases ☐ Shelving
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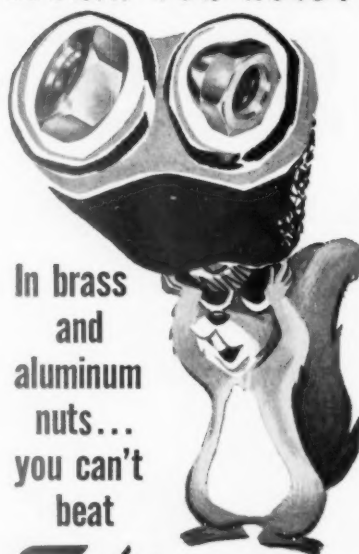
Name _____ Title _____

Company _____

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LOOKIN' FOR NUTS?



In brass
and
aluminum
nuts...
you can't
beat

Fischer for
precision and price!

**MASS PRODUCTION FACILITIES
ASSURE PROMPT DELIVERY OF
STANDARDS OR SPECIALS AT
COMPETITIVE PRICES**

If you use nuts . . . Fischer can mass produce them in brass or aluminum to exacting specifications.

Uniform accuracy of Fischer "turned" nuts permits new savings in assembly or fabricating operations. Produced by unique high-speed machinery, Fischer precision nuts cost no more than those made by less accurate methods.

Fischer nuts are countersunk on both sides, tapped square with face to Class 2 tolerances, burrless, cleaned, degreased and carefully inspected before delivery.

there's no premium
for precision
at

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SPECIAL MFG. CO.



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471 Morgan St., Cincinnati 6, Ohio
Please send me your new 20-page
CATALOG FS-1000 describing
Fischer precision nuts.

Name _____ Title _____
Company _____
Street _____
City _____ Zone _____ State _____
7878-PS

For More Information Write No. 217
on Inquiry Card—Page 32

Products

(Continued from page 103)

a fully automated cut-off unit that will straighten, temper and round-form tubing from coiled stock. A hopper feed for long tubes up to 20' long may also be had.

Write No. 36 on Inquiry Card—Page 32

Vertical Mill Has Right Speed for Job



A vertical mill, in which an infinitely variable spindle speed drive makes it possible to set the spindle speed exactly to the job specifications, is announced by Fenlind Engineering Co., 5602 Pike Rd., Rockford, Ill. Any desired speed is obtainable from 85 to 560 rpm in low range and from 600 to 3,720 rpm in high speed range. The variable speed feature prolongs tool life and greatly improves quality of work. No changing of belts or gears is required in making a spindle speed adjustment. The operator sets the range selector in low or high range and rotates a handwheel control to desired speed. Thus adjustment time is reduced from about 1/2 hour to seconds.

Write No. 37 on Inquiry Card—Page 32

**FOR MORE INFORMATION
ON PRODUCTS IN
THIS ISSUE
USE INQUIRY CARD
PAGE 32**



size where it counts

And it really counts in molding plastic parts! Example: it's because Chicago Molded is one of America's largest plastic molders, that you get on-time deliveries every time . . . more cost-cutting design ideas . . . facilities for fast, quality production of anything from the smallest to the largest parts made—in any quantity. On your next molding job, put size to work where it counts. Call:

CHICAGO MOLDED
PRODUCTS CORPORATION
1025 N. Kelmer Ave., Chicago 51, Ill.
Phone: Dickens 3-9000

For More Information Write No. 218
on Inquiry Card—Page 32

Bands For Every Purpose



ONE PIECE — SEAMLESS
Outstretch — Outlast all others

WE'LL make bands for your special needs. All Plymouth Standard Bands meet Federal Specifications. **NATIONALLY DISTRIBUTED — AT YOUR REGULAR SUPPLIERS.**

PLYMOUTH RUBBER CO., INC.
Since 1896
CANTON, MASSACHUSETTS

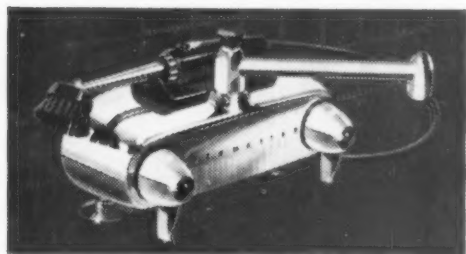
For More Information Write No. 219
on Inquiry Card—Page 32

FACT: *Copper and Brass... today's best metal bargains!*


Competitive analysis of metal costs in manufacturing "Dishmaster" dish washer device switched manufacturer back to brighter, more attractive brass and away from plated steel and other substitutes.



PROOF: *Manville Manufacturing switches back to Brass for a better product at lower cost... drops steel!*



The "Dishmaster" made by Manville Manufacturing Co. of Pontiac, Michigan, includes many small parts again being made of brass. Direct comparison of costs with cadmium-plated steel showed that brass was once again the bargain buy in metal. For example, cost of the retaining ring shown here was reduced \$11.50 per thousand when the manufacturer switched back to brass! Comparable component savings are being made all down the line! (Based on October '57 costs of brass vs. steel.)

Chase 
BRASS & COPPER CO.
 WATERBURY 20, CONNECTICUT
 SUBSIDIARY OF KENNECOTT COPPER CORPORATION

There's no excuse for using substitutes for copper and brass; the genuine article is today's best bargain in metals! Your nearest Chase man can show you specifically how Chase alloys—made of Kennecott copper—can fit into your production picture. Contact Chase locally or at Waterbury 20, Connecticut.

The Nation's Headquarters for Brass, Copper and Stainless Steel

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L. I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

For More Information Write No. 220 on Inquiry Card—Page 32
 FEBRUARY 3, 1958

For More Information Write No. 221 on Inquiry Card—Page 32→
 107

Ambrose-Augusterfer Corporation
has been awarded the
contract for all major piping
in Torresdale Filter Plant
—now under construction in
N.E. Philadelphia. Pipe being handled
weighs over 10,000 lbs. and
measures 40' by 54" in diameter.



Only Yale G-3 Gas

- ① Wide Angle vision
- ② Fast cycle operation
- ③ Greater load stability

Now full visibility, extra safety and handling speed
for efficient, big-load operations...at low cost

Raw materials or finished goods
—versatile Yale high-capacity
Gas Trucks handle any type load
with extra speed, safety and efficiency.



s Trucks give you all 3

Maximum visibility, easy maneuverability, high speeds, safe stability—you'll find the combination of all these vital features exclusively in new Yale G-3 Series High-Capacity Gas Trucks.

Wide-Angle Vision—Yale's revolutionary open-front design reduces frontal obstruction. Upright channels are nested—hoisting cylinders wide-spaced—lifting chains located in front of cylinders, out of line of sight. Driver sits high in center—has 300% more visibility!

Fast Cycle Operation—Yale G-3 Gas Trucks maneuver quickly into position...lift capacity loads at speeds up to 60 feet a minute...travel as fast as 20 m.p.h....spot loads accurately. This fast, smooth operation keeps materials on the move, saves time and handling dollars.

Greater Stability—Low center of gravity, broad lifting base, high underclearance, side-thrust rollers, wide channel-roller spacing, large pneumatic tires—these

and many other features that assure load stability are *standard* on Yale High-Capacity Gas Trucks.

Yale G-3 Gas and LP-Gas Trucks come in capacities of 15,000 to 20,000 lbs.—with fully automatic torque transmission, fluid coupling or standard transmission. Complete line available in capacities of 2,000 to 20,000 lbs.

Get the full story. Send for your free copy of Bulletin #5230. The Yale & Towne Mfg. Co., Philadelphia 13, Pa., Dept. A-252.



YALE*

*REG. U. S. PAT. OFF.

INDUSTRIAL LIFT TRUCKS AND HOISTS

YALE & TOWNE

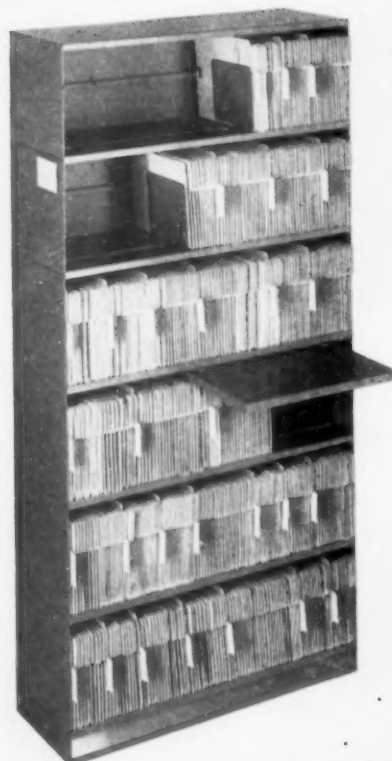
GASOLINE, ELECTRIC, DIESEL & LP-GAS INDUSTRIAL LIFT TRUCKS • WORKSAVERS
WAREHOUSERS • HAND TRUCKS • HAND AND ELECTRIC HOISTS

YALE MATERIALS HANDLING DIVISION, THE YALE & TOWNE MANUFACTURING CO. MANUFACTURING PLANTS: PHILADELPHIA, PA.; SAN LEANDRO, CALIF.; FORREST CITY, ARK.

Office Equipment and Supplies

Increase Savings of Floorspace

Office equipment represents a sizable portion of the dollars spent by purchasing agents, while floorspace is becoming increasingly more costly. Here are some extremely important tips to help you keep up-to-date on dual savings possible with the recent innovations in this field.



TODAY'S PURCHASING agent makes every attempt possible to reduce the amount of paperwork flowing through his department. The redesigning of forms, combining two or more forms when feasible, elimination of some no longer serving a worthwhile purpose; these are all steps which the alert P. A. is taking to help himself in this effort.

However, this same P. A. knows that he will never eliminate paperwork entirely so he is also looking for ways of easier handling for the paperwork which he must have to function as a profitmaking department.

Diebold, Inc., of Canton, Ohio, a leading manufacturer of office equipment recently introduced a new idea in open shelf filing which should prove of interest to the purchasing man searching for cost-saving ideas.

The new idea is based on a modular concept that is expressed through an exclusive feature that allows for expansion of filing space as additional filing space is needed; one shelf at a time if necessary. Filing capacity of these important purchasing records can grow and keep step with the company's growth.

Through an inter-locking system, the open shelf filing units can be added side-to-side, top-to-bottom, or back-to-back. Individual units lock together quickly and securely to form the solidity and rigidity of unified construction.

Available in two sizes to accommodate both letter and legal size file folders the filing units show important savings in space requirements. Additional savings

are possible through the use of the basic open shelf filing principle itself.

Another feature of the Diebold Open Shelf Filing is a removable posting shelf that locks into place where it's needed and when it's needed. The shelf unlocks with finger-tip action to transfer to other areas, eliminating the conventional, stationary pull-out shelf.

Filing guides will not pull out of position because of a special guide channel bar. The guide locks securely over the bar yet there is no obstruction of free side-to-side movement.

Open shelf filing is particularly suited to either middle digit or terminal digit filing systems.

HERE'S HOW

Eastman Tag  gets faster processing from
its new ADP order-billing-shipping system

The Company's original method involved manual calculating, writing, checking, and copying operations in various departments during normal order processing. Whenever changes were incorporated, the entire order was reprocessed. Cards were manually key-punched for many operations, making secondary controls necessary.

Automated Data Processing eliminated these disadvantages. It provided faster processing, machine calculation, accuracy, and cost control with a minimum of manual operations.

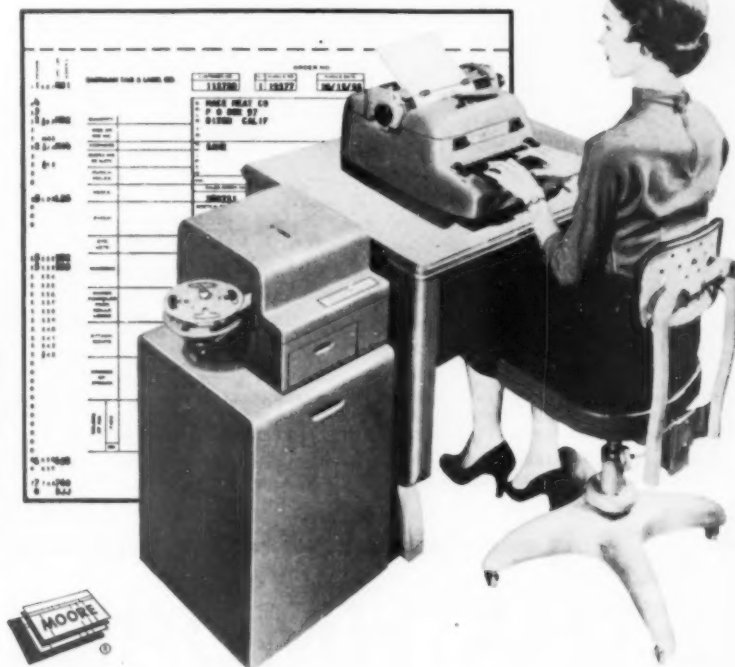
The new ADP system uses a 9-part Moore Production-Acknowledgment-Shipping Order as the initiating form. The Order is typed on

an IBM Typewriter Tape Punch which automatically produces a by-product punched tape for conversion to punched cards. The cards prepare all subsequent records . . . including the Invoice and Statement.

The Moore man, using Moore facilities, helped the Company's systems men in the scientific design and construction of the forms that fit the Automated Data Processing system. The Moore forms are: a 9-part Speediset Production-Acknowledgment-Shipping Order; an 8-part Speediflo Invoice Form; a 2-part Continuous NCR Statement; an 8-part Continuous Marginal Punched Stock Goods Order-Invoice.



If you would like to read the details in this booklet, write on your Company letterhead to the Moore Office nearest you.



MOORE BUSINESS FORMS

NIAGARA FALLS, N. Y. • DENTON, TEX. • EMERYVILLE, CALIF.

Since 1882 the world's largest manufacturer of business forms and systems. Over 300 offices and factories across U.S., Canada, Mexico, Caribbean and Central America.

For More Information Write No. 222 on Inquiry Card—Page 32

FEBRUARY 3, 1958



JOHNS-MANVILLE CORPORATION
22 EAST 60th STREET • NEW YORK 16, N. Y. • TELEPHONE: LEXINGTON 9-7490

A century of industrial leadership is expressed in this symbol which will keynote the Johns-Manville anniversary throughout 1958.

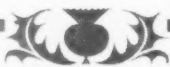
Progress
builds on **Quality!**

You can tell a company's character by the letterhead it keeps. Johns-Manville, a long-time Strathmore user, for example, recently selected still another fine Strathmore paper for its anniversary letterhead. Such continuing loyalty is, happily, common with Strathmore users—among whom are an extraordinary number of the most distinguished firms in the nation. They remain convinced, year after year, that their business correspondence on Strathmore is a quality character reference of the most expressive sort.

Johns-Manville protects against fire, weather and wear with asbestos building materials...safeguards water supplies with asbestos cement pipe...controls heat and cold with insulations, motion with asbestos brake lining. Johns-Manville makes homes more comfortable and helps industry produce better products for better living.

STRATHMORE LETTERHEAD PAPERS: STRATHMORE PARCHMENT, STRATHMORE SCRIPT, THISTLEMARK BOND, ALEXANDRA BRILLIANT, BAY PATH BOND, STRATHMORE WRITING, STRATHMORE BOND. ENVELOPES TO MATCH CONVERTED BY OLD COLONY ENVELOPE CO.

STRATHMORE THIN PAPERS: STRATHMORE PARCHMENT ONION SKIN, STRATHMORE BOND ONION SKIN, STRATHMORE BOND AIR MAIL, STRATHMORE BOND TRANSMASTER, REPLICA.



STRATHMORE
MAKERS OF FINE PAPERS
STRATHMORE PAPER COMPANY, WEST SPRINGFIELD, MASSACHUSETTS

BETTER PAPERS ARE MADE WITH COTTON FIBER



For More Information Write No. 223 on Inquiry Card—Page 32

Office Equipment



An improved version of the desktop Copyflex machine, the Bruning Copyflex Model 110 is a product of the Charles Bruning Co., Chicago 4, Ill. It features a full 11-inch copying width which permits copying of all but the largest standard worksheets. A "touch feed" principle in its design contributes to smoother operation by allowing feeding of exposed paper into the developer slot with a mere touch of the hand. The Model 110 makes up to 300 letter-size copies per hour at a cost for material of less than one cent per copy. Any number of copies can be made of the same original—all as sharp as the first.

Write No. 38 on Inquiry Card—Page 32

"How to Measure your Filing Costs and Efficiency" by Remington Rand Division of Sperry Rand Corporation has a list of 19 check points to help management uncover the strengths and weaknesses of the filing operation. A reference chart provides at a glance the cost of operating a four-drawer file, depending upon the average salary of file clerks, and the average number of files handled by each clerk. Revealing that the average cost of creating the contents of a standard four-drawer file cabinet is nearly \$10,000, the manual stresses the importance of determining that full value is received from the filing system.

Write No. 39 on Inquiry Card—Page 32

Cushman & Denison Manufacturing Company, New York recently published a completely descriptive, fully illustrated eight-page, two-color brochure on their line of Flo-master felt tip marking pens.

Write No. 40 on Inquiry Card—Page 32



RAYMOND LOEWY, world-famous industrial designer, explains:

"A beautiful product has a promise to keep"

"Its performance must match its beauty. We apply this principle as much to the papers we use as to the products we design.

"Naturally we want the visual beauty and crispness of cotton fiber paper in our business letterheads. But its strength and permanence are important to us in drawing, tracing, and record-keeping papers as well."

Tough, flexible cotton fibers, crafted with traditional skill and specialized machinery,

create papers of balanced quality. Papers that perform as handsomely as they look and feel . . . in business and social stationery, onion skin, index, ledger, drawing, tracing and blue print papers.

For practical reasons . . . as well as prestige . . . make sure the papers you use are made with cotton fiber—25% minimum up to 100% in the finest grades.

© Cotton Fiber Paper Manufacturers, 122 E. 42nd St., N.Y.C.



BETTER PAPERS ARE MADE WITH COTTON FIBER

LOOK FOR "COTTON" OR "RAG" IN THE WATERMARK OR LABEL



The young lady is
to be commended

BECAUSE
REMARKABLE
RESISTALL
LINEN LEDGER
IS WASHABLE!

and withstands all such things as
hard rubbing without roughening
the surface . . . plus

Resistance to

Boiling water
Oil and grease
Hard handling
Many alkalis and acids
Perspiration

RESISTALL Linen Ledger is made of
100% new, white cotton fibers.
Another famous L. L. Brown quality
value.

YOURS AT VIRTUALLY
NO INCREASE IN COST

L. L. BROWN

Correspondence & Record

PAPERS



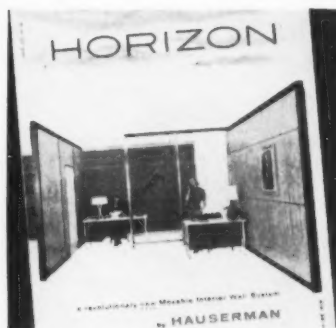
Since 1849
Adams, Massachusetts



For More Information Write No. 225
on Inquiry Card—Page 32

114

Office Equipment



A full-color, six-page brochure
is being offered by the **E. F.
Hauserman Company, Cleveland**,
describing the firm's new mov-
able interior wall system. En-
titled, "Horizon" the brochure
illustrates the system's complete
movability and custom selection
of panel materials, feature inserts,
modules, post shapes, glass pat-
terns, and panel colors.

Write No. 41 on Inquiry Card—Page 32

"For Building Business . . ."

The Elbe File & Binder Co., Inc.,
Fall River, Mass., published an all-
new, 116 page, loose-leaf & sales
presentation catalog. It lists over
1500 stock items and hundreds of
made-to-order binders. The fea-
tures: 1. An exclusive loose-leaf
planning section; 2. Helpful idea
sections for increasing office and
sales efficiency; 3. Special sections
dealing with sales tools, custom-made
products, advertising specialties,
business gifts and visual aids; 4. Dozens of all-new stock lines and
advanced styles.

IDEAS

For Building Business with:

- BINDERS
- FOLDERS
- PRESENTATIONS

JUST PUBLISHED — 116 page catalog
for every business need **YOURS FREE**

Write Today

ELBE FILE & BINDER CO., INC.
FALL RIVER MASSACHUSETTS

P.O. BOX 411-FOURTH AVE.
FALL RIVER, MASSACHUSETTS

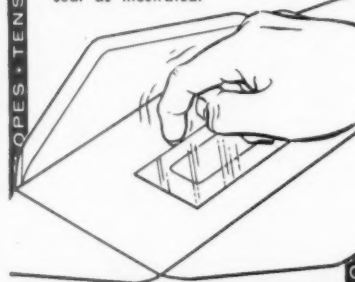
ONE OF AMERICA'S LARGEST MANUFACTURERS OF LOOSE-LEAF PRODUCTS

Dept. P-2

For More Information Write No. 226
on Inquiry Card—Page 32

Does Your Window Envelope Pass the "Fingernail" Test?

To make test—tear open window
envelope and spread flaps. Try
to get fingernail under window
seal as illustrated.



Ordinary Window

Tension Solid-Seal

Left: An ordinary window envelope
won't pass the test. Your fingernail
snags the unglued outer edge and
pushes it up. Result—real stuffing prob-
lems when inserts snag on window!

Right: Your fingernail won't loosen
the window on a Tension Solid-Seal
because the window seal is smoothly
and completely glued to the very
outer edge. And because no excess
glue is exposed, the body of the
envelope can't stick together. No
snags on meter equipment either.

TENSION SOLID SEAL

Window Envelope Passes the
"Fingernail" Test Every Time!

Tension Solid-Seal Window En-
velopes give you smooth, snag-
free hand or machine stuffing.
Cuts envelope waste. Helps pre-
vent costly insert slowdowns.
Available in stock sizes and
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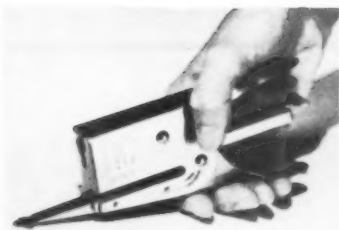
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For More Information Write No. 227
on Inquiry Card—Page 32

PURCHASING



Neva-Clog Products, Inc., Bridgeport, Connecticut is now selling a product that will do and undo the same thing; staple papers or other material together and remove the staples when they are no longer needed. The blade for removing staples is retractable and does not interfere with normal stapling operations. With a flick of the finger the staple removing blade snaps into position.

Write No. 42 on Inquiry Card—Page 32

The Eastman Kodak Company, Rochester, New York recently published a booklet describing the varied uses of photocopying. A 16-page illustrated booklet entitled, "Verifax Copying—Versatile Time-Saver for Busy Offices" the publication describes in capsule case histories how companies are saving time and money with modern office copying systems.

Write No. 43 on Inquiry Card—Page 32



A new line of Fiberglas reinforced plastic chairs is now being marketed by **Tri-Mark Corporation of Philadelphia**. Features of the chair are: availability in five colors; foam rubber seat pads; legs designed to give the impression that they come from the chair shell; and the legs also are available in black, bronze and chrome.

Write No. 44 on Inquiry Card—Page 32

FEBRUARY 3, 1958

THE DESK SET THAT WON'T CLOG . . .



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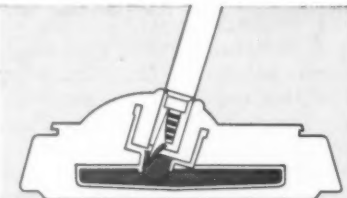
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It's the only desk set that keeps up to a 6 month supply of ink protected against evaporation from air circulation.

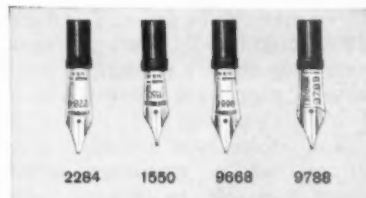
And . . . at the slightest touch of the point, the exclusive magic-meter in the Feed-matic* base instantly feeds the pen enough ink to write 500 words.

There has never been a desk set like the Esterbrook 444—always ready to write when needed, protected against drying out when not in use. Available in black or high-fashion colors . . . only \$4.95.

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Esterbrook® 444

Desk Set with
Feed-matic Base.

For More Information Write No. 228 on Inquiry Card—Page 32

Education Stressed by New England Association



Dr. Howard T. Lewis

THE DIRECTORS of the New England Purchasing Agents Association sincerely feel that of the several services available to the members, none is more vital than a purchasing slanted education. Such education gives the members worthwhile assistance in their work, and draws them closer together, say the directors.

Knowledge of purchasing techniques, according to the directors, comes from studying textbooks, listening to word of mouth discussions by more experienced members, and by hearing talks given by specialists in various phases of the subject.

The directors hope to use all three methods in presenting their 1958 program. To open the new year they chose a subject all purchasing people are interested in—Ethics.

The subject was discussed at a forum where members were given a chance to express their own views, and to listen to the opinions of their fellow members. Emphasis was placed on approved and disapproved patterns of behavior for both purchasing and sales people. The purchasing agent's obligations to his com-

pany, his suppliers, and to his profession were discussed. The members also looked into ways of combating "sharp practices."

At the end of the discussion Major George J. Cronin, purchasing agent for the Commonwealth of Massachusetts, gave a brief address on ethics. He is well qualified to speak on the subject. For over thirty years he has exemplified the highest professional ideals in the practice of his profession.

Frank K. Griesinger spoke at the dinner following the forum. He is associated with the Lincoln Electric Company, the world's largest manufacturer in the welding industry.

A forceful speaker at management seminars, Mr. Griesinger has received national recognition for his studies in equipment leasing. In his address he related purchasing to some of the fiscal problems faced by business in 1958 and suggested ways to solve them.

Management Seminar to be Held in Boston

An advanced management seminar in Industrial Procurement and Materials Management is

being sponsored by the Graduate Division of Northeastern University.

Conducting the seminar will be Dr. Howard T. Lewis, professor emeritus, Harvard Graduate School of Business Administration; and professor of procurement, Northeastern University Graduate School of Business.

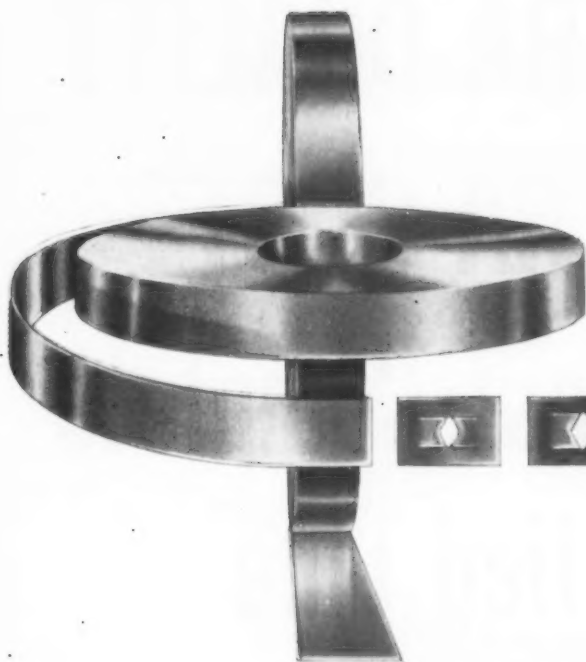
The seminar is designed to help the purchasing agent meet the new demands of management. Realizing that effective materials management provides one of the most promising methods to meet the challenge of increasing competition, alert management is charging the purchasing agent with responsibilities far beyond the mere acquisition of materials.

These new responsibilities require administrative knowledge and skills which cut across the entire organizational, financial, and operational phases of business.

The seminar focuses attention on this "forward look" in procurement, stressing the need for a searching re-evaluation of the organization and policies of the purchasing function.

For More Information Write No. 229
on Inquiry Card—Page 32→

PURCHASING



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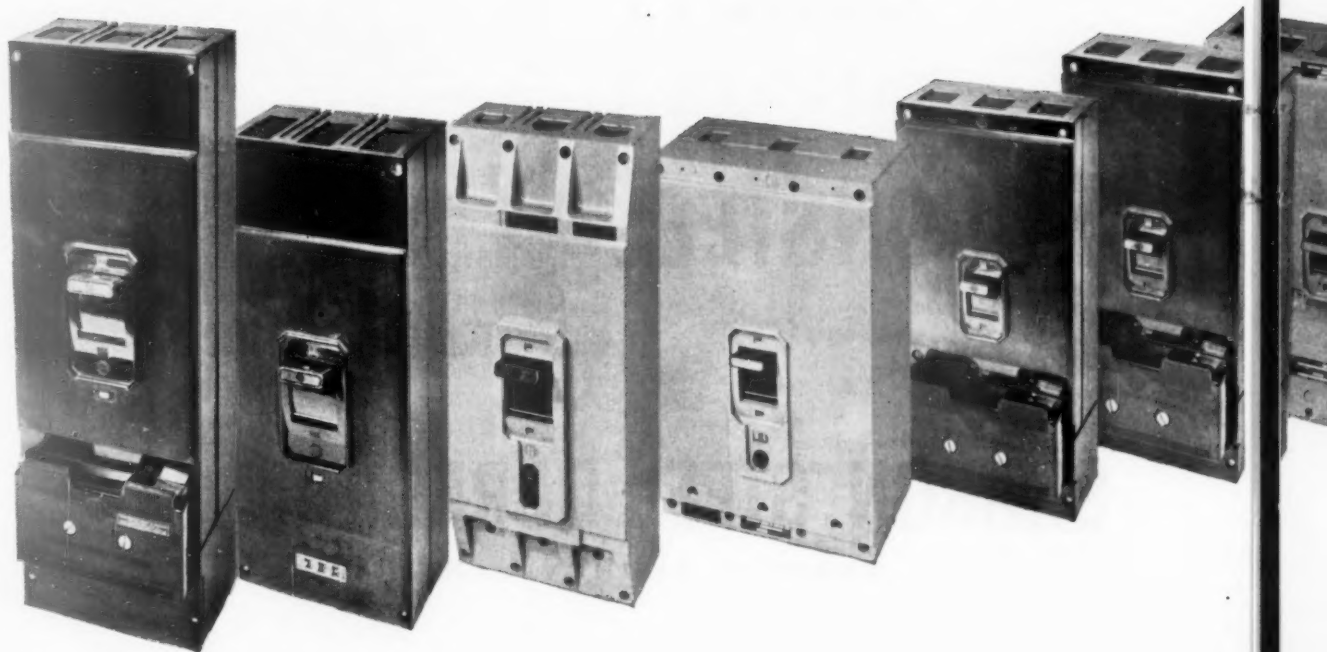
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For More Information Write No. 233
on Inquiry Card—Page 32

Association News

Newspaper Buyers Group To Be Formed

A national organization of purchasing executives and buyers for newspapers is being formed. A two-day conference will be held in Louisville, Kentucky on January 24 and 25 at the Brown Hotel to complete the organization of the group and to discuss purchasing problems of particular interest to the newspaper and broadcasting industry.

The committee organizing this group and arranging for the January conference is composed of: G. N. Barrett, Philadelphia Bulletin; T. A. Corcoran, Louisville Courier-Journal and Times; Lou Davis, Los Angeles Times-Mirror; I. S. Finn, Chicago Sun-Times; Charles B. James, Chicago Tribune; D. J. Lewis, Christian Science Publishing Company, Boston; Owen D. Lewis, Winston-Salem Journal & Sentinel; Eugene Parrish, St. Petersburg Times; and George L. Quinn, Minneapolis Star-Tribune.

The Louisville conference is open to anyone actively engaged in procurement for newspapers and broadcasting stations. Details can be obtained from any member of the committee.

Buffalo Ass'n Holds Two Meetings

Two outstanding dinner meetings were held by the Purchasing Agents Association of Buffalo at the Hotel Stuyvesant.

A. M. Kennedy, Jr., vice president of purchases and traffic at the Westinghouse Electric Corporation, spoke on the subject "The Shape of Tomorrow" at a recent meeting. The following meeting was "Executive Night," when the P.A.'s invited "the boss" to attend as their guests.

The educational committee, headed by Jack Rutherford, will conduct an advanced purchasing techniques course. The five-night course will begin February 5 and will feature outstanding speakers on valuable subjects for the purchasing agent.

For More Information Write No. 234
on Inquiry Card—Page 32→
PURCHASING



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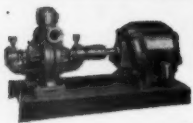
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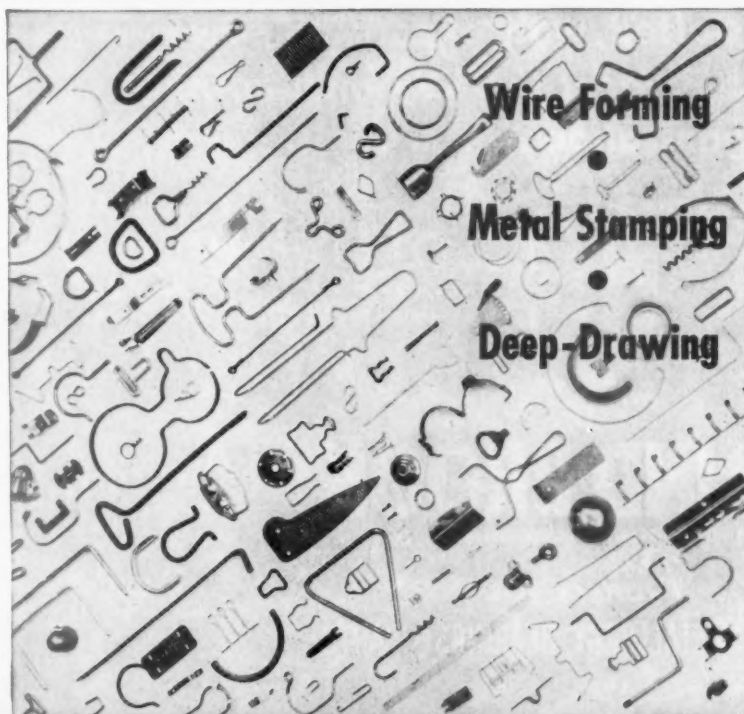
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For More Information Write No. 236 on Inquiry Card—Page 32

Association News

British Columbia Conducts Lively Meeting

A delegation of British Trade Representatives were guests at a recent meeting of the Purchasing Agents Association of British Columbia. A panel consisting of Leslie Reid and John Saunders, British Trade Commissioners in Vancouver, together with several British business men, were introduced by Vice President C. A. Elkington. Other members of the panel were John Mathews, market officer for the United Kingdom, Derrick Picard, manager of British Overseas Airways in Vancouver, Alfred Roseblade of English Steel Corporation, Harry Harrison, Furness Line and Jim Pine of Associated Electric Industries.

Mr. Reid and Mr. Saunders spoke of the large export trade British Columbia enjoys with the United Kingdom and the necessity of reciprocal trade so that Britain could obtain the necessary Canadian dollars to continue to import from Canada.

Members were then given the opportunity of questioning the panel, and a very lively discussion followed. There was strong criticism of Britain's method of doing business in Canada. Uncertain deliveries, poor sales agents, lack of service for English products, after market sales, poor workmanship, were some of the subjects brought up by the members. President A. S. Nursey suggested that British Trade delegations to Canada should contact purchasing agents so these problems could be overcome. Mr. Saunders pointed out that confirming agents in Britain to look after orders placed in the United Kingdom has proved successful for some B.C. firms. Mr. Picard of B.O.A.C. suggested sending a representative of the association over to Britain periodically to contact British suppliers personally to expedite shipments of orders.

READER-SERVICE CARD
ON PAGE 32

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Association News

Wisconsin N.I.G.P. Holds Meeting in Milwaukee

A meeting of the Wisconsin Chapter of the National Institute of Governmental Purchasing was held recently at the Hotel Schroeder.

Gil Guetzkow, director of priorities and allocations for the central board of purchases of Milwaukee, talked about methods used by municipalities to obtain equipment for civil defense and surplus material and equipment for municipal use. Maurice Park, purchasing agent for Dane County, Wisconsin had as his subject the purchase of furniture for county buildings. Mr. Park outlined especially the large amount of new furniture which has been purchased by his department for the new Dane County office building. Each piece of furniture offered was carefully inspected and tested, he said, some chairs, having been cut up to show how they were built and how they would stand up in service.

Orville Gartman, purchasing agent for the city of Oshkosh, addressed the members on "Selling to the Governmental Purchasing Agent." He said, in part: "We all know that a purchasing agent is in a position to be one of the city's best salesmen or public relations officers. The treatment a salesman receives when calling on a municipal purchasing agent is often reflected throughout the community or area as the various salesmen compare notes. I have had a salesman tell me: 'No, I did not get the business in Milwaukee. We were not low bid, but there is a city that handles its purchasing on the up and up, and we know salesmen get a fair deal.'"

The subject of co-operative purchasing for municipalities was discussed at length, after a talk by William Boyd, purchasing agent for the Milwaukee School Board, in which he said, "In days gone by much of the drive and push in governmental purchasing was directed to centralization of

For More Information Write No. 238
—on Inquiry Card—Page 32

purchasing in cities, counties and states. Much progress has been made in this direction and we find large numbers of purchasing agents doing all of the purchasing for their units of government. Today, new opportunities are appearing in purchasing to save some of the taxpayers' dollars. I refer to co-operative buying. This follows no set rules or regulations and consists simply of presently established purchasing offices helping each other in various ways. No legislation is needed—just the desire to help each other.

"In many states, counties and other local units of government, purchasing agents are permitted to buy from contracts let by the state. Local units may, in turn, buy from county contracts, or from other contracts of cities, towns, school boards. Usually the largest user of an item will let the contract, with a provision in it that the contractor will furnish other units of local government at the same price. This type of contract is especially useful on such items as sand, gravel, topsoil; sod, cement, oil, gasoline, electric lamps."

Denver Ass'n Holds Two Meetings, Plant Visit

Two highly successful meetings and a plant visitation were among the recent activities of the Purchasing Agents' Association of Denver.

Professor Paul Keating of the Colorado School of Mines spoke on the subject "Bedroom Identification of Gem Stones" at a dinner meeting on the college campus. The next meeting at the Brown Hotel—Executives' Nite to which the P.A.'s invited their bosses—featured an address by G. Howard Ahl, executive secretary of the National Association of Purchasing Agents. The plant visit was to the United Air Lines facility at Stapleton Field where its IBM control system was explained.

The association has announced the winners of the standardization contest last spring. Carl Roberts' paper took first prize,

(Please turn to page 126)

FEBRUARY 3, 1958

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For More Information Write No. 239 on Inquiry Card—Page 32

125



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For More Information Write No. 240 on Inquiry Card—Page 32

Association News

(Continued from page 125)

Cooper Duke was second and Tom Paterson was third. This year, the standardization committee, under the chairmanship of Ken Huston, plans to furnish a monthly standardization bulletin, which will include examples of the use of standardization among the members.

Bud Manning, chairman of the education committee, has reported an enrollment of about fifty men in a purchasing course sponsored by the association at the Opportunity School. District Education Chairman Harold Berry is scheduled to be guest speaker at the March meeting.

South Bend P.A.'s Join Accountants

The South Bend Association of the National Association of Purchasing Agents held its monthly dinner meeting at the Lincoln Highway Inn in Mishawaka, Indiana. The meeting was held jointly with the National Association of Accountants.

The meeting featured a panel discussion on the relationship of purchasing and accounting. Representing the purchasing agents on the panel were: Frank Motis, divisional purchasing agent of U. S. Rubber Co., Mishawaka, Indiana; Al Koehnke, purchasing agent of Koontz Wagner Electric Co., South Bend, Indiana; Larry Munzenmaier, purchasing agent of C. G. Conn., Ltd., Elkhart, Indiana; Dick Fabrycki, purchasing and partner of Stevens Oil Co., South Bend, Ind.

Representing the accountants were: Robert Holtz, chief accountant of Martin Band Instruments Co., Elkhart, Indiana; George Lawrence of Chas. D. Hoydt Co., Mishawaka, Ind.; William Payne of Torrington Co., South Bend, Ind.; Borden Cox of O'Brien Corp., South Bend, Ind.

H. J. Baker, assistant purchasing manager of U. S. Rubber Company, was in charge of the meeting.

PURCHASING

Program Aids

To assist program chairmen in planning association meetings and company conferences, available film and other program aids will be listed in these columns from time to time.

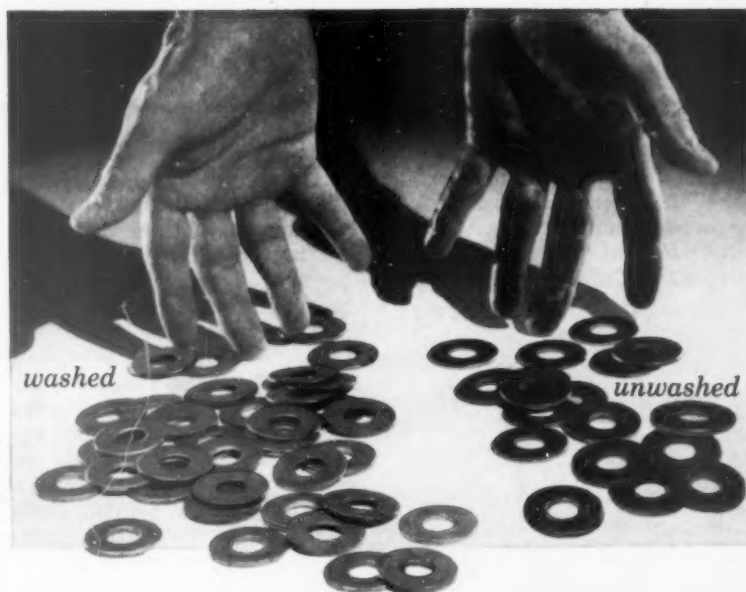
"Eternally Yours." Black and white one-reeler, built around man's discovery of wrought iron, its history, properties and uses. The film traces the march of technology which has kept the metal economically important to artisans, architects and design engineers for more than 1900 years. Running time: 31 minutes. Write to A. M. Byers Company, Clark Building, Pittsburgh, Pa.

"Storage Battery Power." How Thomas A. Edison invented and perfected the Nickel-Iron Alkaline type of storage battery; where it is used and how it is manufactured. Black and white, sound on film, 20 minutes. Contact Thomas A. Edison Industries of McGraw-Edison Company, Storage Battery Division, West Orange, New Jersey.

"Walls Without Welds." A technicolor presentation of seamless steel pipe and tubes, and the modern methods used in their manufacture. Includes views of the manufacture of large diameter seamless pipe, showing the operations of the High-Mill, rotary rolling, reeling, sizing, and finishing. Time: 28 minutes. Distributed at United States Steel Film Distribution Centers.

"Industrial Purchasing." Ideal for orienting the student and the layman in the role of purchasing as it applies to modern industry. Film shows how the purchasing agent of a refrigerator manufacturer played his part in solving a problem of company wide scope. A color film, 16mm, sound, 21 minutes. Write Encyclopedia Britannica Films, Wilmette, Ill.

"The Typewriter in Business." A 16mm black and white sound film demonstrating the purposes and uses of important typewriter devices, attachments, keyboards and other variations. Running time: 20 minutes. Available from Remington Rand, 315 Fourth Avenue, New York 10. Folder #R-8826.



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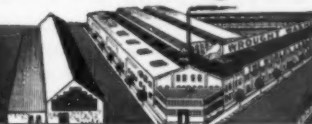
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For More Information Write No. 241 on Inquiry Card—Page 32 A7-9383

Purchasing People In The News

Lester M. Danner has been promoted to purchasing agent of Raymond Manufacturing Company division of Associated Spring Corporation, Corry, Pennsylvania.



Lester M. Danner

Mr. Danner succeeds **Cornelius H. Holden**, who has retired after more than 40 years of service with the division. Associated with the firm since 1941, Mr. Danner became director of priorities in 1942. Two years later he was named assistant purchasing agent, which position he held up to the time of his recent promotion. He is a member of the National Association of Purchasing Agents and is a former president of the Northwestern Pennsylvania Purchasing Agents Association. Mr. Holden, the retired purchasing agent, joined the division in 1916 and served in various capacities until 1920. He was then transferred to the newly formed cost, payroll and purchasing department. Nine years later he assumed the responsibilities of purchasing agent. In 1941 he was elected a director of Associated Spring Corporation. Mr. Holden is a member of the Northwestern Pennsylvania Purchasing Agents Association, and has been president and national director of this organization.

Robert D. Smith and **Richard E. Bauman** have been appointed division purchasing agents in the Standard Oil Company (Indiana). Mr. Smith succeeds R. W. Ringrose who has retired after 50

years of service, as division purchasing agent in the field division. Mr. Bauman replaces Donald T. Daegling who has retired after 41 years as division purchasing agent in the supplies division. Mr. Smith will be in charge of the company's field buying offices. Associated with the company since 1933, he started in the sales department in Chicago and was transferred to the purchasing department in 1940 and became a buyer in 1950. Mr. Bauman, who has been a buyer in the department the past year, will supervise the supplies division staff at Chicago.

Russell White has joined Hagan Chemicals & Controls, Inc., Pittsburgh, Pennsylvania, as mechanical equipment buyer for the company's regulation division. Formerly a buyer for Scaife Company,



Russell White

Oakmont, Pennsylvania, Mr. White has been assigned to the purchasing department and will be responsible for coordinating all outside purchasing activities of the division. In his new position, he will work closely with headquarters contract engineering personnel and actual producing plants. Before his two years with Scaife, Mr. White worked as an expeditor for Gulf Oil Corporation's purchasing department and as a buyer for Gem and Sheplar Manufacturing Companies, Pittsburgh.

Charles J. Schnelle, vice president in charge of purchases, has been elected a director of The Acme Wire Company, New Haven, Connecticut. An employee

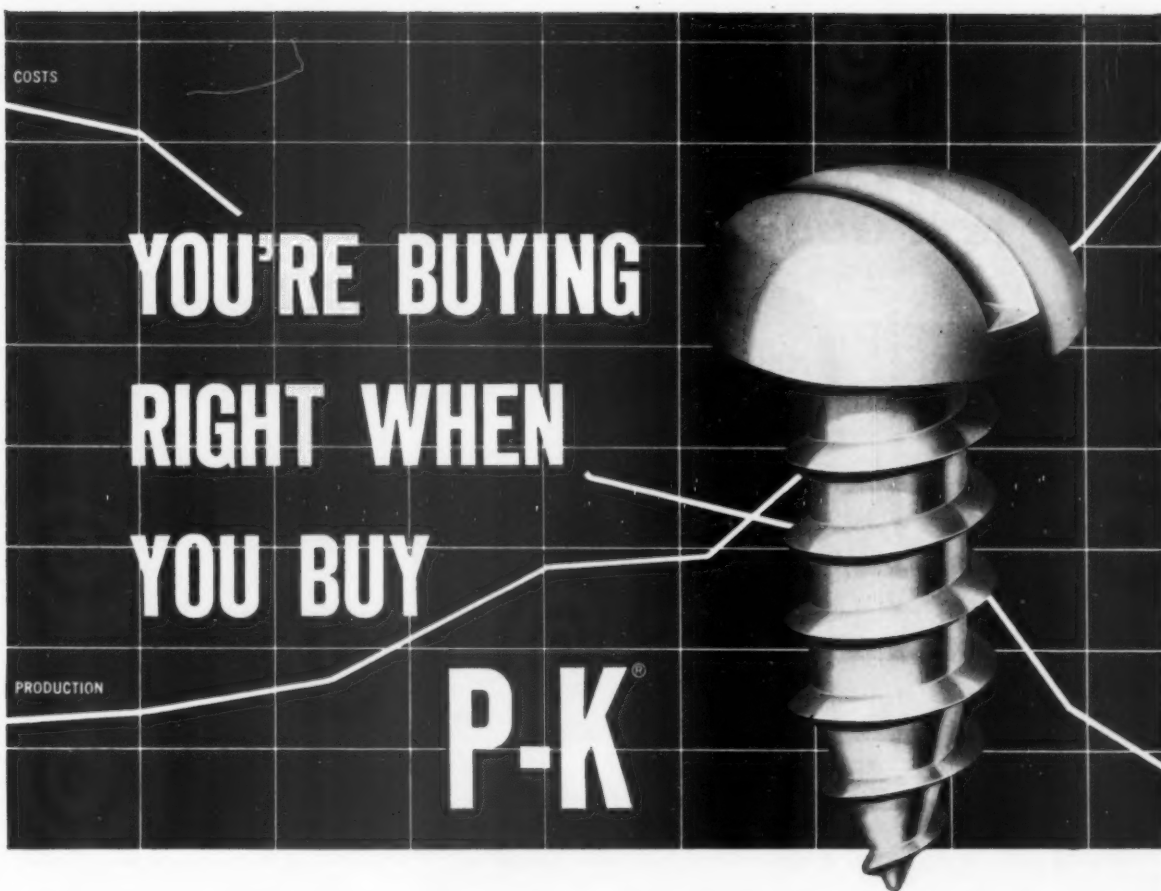


Charles J. Schnelle

of the company for over 52 years, Mr. Schnelle has been a vice president since 1941 and purchasing agent since 1912. He has been a member of the National Association of Purchasing Agents since 1915, and is a former national director from Connecticut. He is a charter member and a past president of the Purchasing Agents Association of the same state.

The appointment of **Don Werter** as purchasing agent has been announced by Clary Corporation, San Gabriel, California. Mr. Werter has been associated with the corporation for two and one-half years as a buyer. Prior to that he was a member of the purchasing department of Essick Manufacturing Company, Los Angeles.

Promotion of **Leo B. Conard, Jr.** to the position of purchasing agent for the Chase Metal Works Division has been announced by Chase Brass & Copper Co., Waterbury, Connecticut. Mr. Conard joined the company in 1940. He succeeds Nelson M. Camp, who has accepted a position in the purchasing department of Kennecott Copper Corporation, parent concern of Chase.



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For More Information Write No. 243 on Inquiry Card—Page 32

Purchasing People

The appointment of **Gilbert J. Kehr** as purchasing agent has been announced by the G. H. Tennant Co., Minneapolis, Minn.



Gilbert J. Kehr

He succeeds Paul M. Kroeger, who has retired after 14 years as purchasing agent for the company. Mr. Kehr had been chief purchasing analyst.

H. F. Moore has been named purchasing agent for the Dodge Truck plant, Detroit, Michigan. Formerly truck purchasing supervisor of the division purchasing office, Mr. Moore joined the Chrysler Corporation in 1933. He became associated with Dodge in 1955.

Robert A. Simpson has celebrated 40 years of service with Libby, McNeill & Libby, Chicago, Illinois. Mr. Simpson is head of the company's purchasing department. From 1917 to 1941 he was connected with production and sales operations. He has been in charge of purchasing since 1941.

Schutte and Koerting Company's new Instrument Division has announced that **Stephen J. Leskowski** has taken over the position of purchasing agent. The purchasing office is located in the division's new plant in Cornwell Heights, Bucks County, Pennsylvania.

Edward H. Roos has been named vice president in charge of engineering, production and purchasing for C. A. Norgren



Edward H. Roos

Company, Englewood, N. J. Mr. Roos has been factory manager since he joined the company in 1949. He succeeds Leigh H. Norgren who became executive vice president of Norgren-Stemac, Inc., Denver and Littleton.

A. G. Pearson, purchasing agent for Northrop Aircraft, Inc., El Segundo, California, has been appointed by National Chairman Harold Berry to the chairmanship of the educational project on "Evaluating the Efficiency of the Purchasing Department." Mr. Pearson will carry on the project which was started by E. H. Weaver.

Fred Coker has been named purchasing agent for the Fulton Sylphon Division, Robertshaw-Fulton Controls Company, New



Fred Coker

York. Mr. Coker formerly had been assistant purchasing agent and previously had served as a buyer. He joined the company in 1940.

Appointment of William T. Kane as manager of the material department has been announced by Detalab, a division of Consolidated Electrodynamics Corporation, Pasadena, California. Rodney O. Bray has been named purchasing agent to succeed Mr. Kane. Both men are members of the N.A.P.A. and the Los Angeles Purchasing Agents Association.

You Need Only One Card to Request Additional Information on Any Item in This Issue. Use the Reader Service Card Page 32

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FEBRUARY 3, 1958



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No. 25 Actual Size
Pitch 1/4" Width 1/8"



No. 35 Actual Size
Pitch 3/8" Width 3/16"



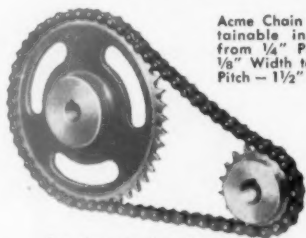
No. 41 Actual Size
Pitch 1/2" Width 1/4"



No. 40 Actual Size
Pitch 1/2" Width 5/16"



No. 50 Actual Size Pitch 5/8" Width 3/8"



Acme Chain is obtainable in sizes from 1/4" Pitch — 1/8" Width to 2 1/2" Pitch — 1 1/2" Width.

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SINGLE and MULTIPLE STRAND

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Chain**
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HOLYOKE
MASSACHUSETTS

For More Information Write No. 248 on Inquiry Card—Page 32

Purchasing People

International Business Machines Corporation has announced the appointment of **George W. Woodsum** as purchasing agent for the company's manufacturing plant in



George W. Woodsum

Rochester, Minnesota. **Thomas H. Ferry** has been named assistant purchasing agent in charge of contract procurement. Mr. Woodsum joined the corporation in 1946 in the product engineering department at the Poughkeepsie, New York plant. In 1955 he was appointed assistant manager of



Thomas H. Ferry

engineering personnel and the following year was made manager of research personnel, the position he held until his present appointment. Mr. Ferry joined the firm in 1942. He held various plant positions before he became a buyer in 1951. He was appointed manager of contract procurement for the Rochester plant in 1954 and continues in charge of expanded contract procurement operations.

PURCHASING

The Federal-Mogul Division of Federal-Mogul Bower Bearings, Detroit, has announced the promotion of **Robert C. Carson** to



Robert C. Carson

director of purchases. In his new position, Mr. Carson is responsible for purchasing the principal raw materials used at the company plants in Greenville and St. Johns, Michigan, Cleveland, Ohio, and Mooresville, Indiana. He will coordinate other purchasing activities at these plants and supervise operations at the division's general offices in Detroit.

The appointment of **Robert L. Lozon** as general purchasing agent has been announced by the Glidden Company, Cleveland, Ohio.



Robert L. Lozon

Associated with the firm since 1933, Mr. Lozon started his career as a biller in the purchasing department of the company.

**FOR MORE INFORMATION
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INQUIRY CARD—PAGE 32**

Fairbanks 5 Cost-Cutters For Your Light, Bulky Materials Handling Jobs

rugged construction and smoother operation take the load off your mind . . .



9215-S General Purpose Truck — more widely regarded as a necessary tool in shipping rooms, stores, warehouses, passenger baggage terminals and with transfer and express companies — for use on delivery trucks—where it is unsurpassed for handling small lot merchandise including round objects. Steel framed construction.



A-1448 Utility Truck — very popular in stores, offices, institutions, shipping rooms and factories for carrying small lot merchandise and widely used in bottling and beverage plants and on beverage delivery trucks for moving case lots. All steel welded construction, fitted with stair climber.



Lift Jack Platform Trucks — perfect answers for minimum cost temporary storage of raw material, parts, semi-finished goods or finished pieces. Jack handle has no moving parts — engages and disengages semi-live skid simply and quickly. One jack handle sufficient for a number of platforms.



"Bantamweight" Platform Trucks — outstanding values for lightweight materials handling from low initial cost through minimum operating expense. Readily adaptable to continuous conveyor systems. Light and strong construction, very mobile on Fairbanks "Lockweld" Double Ball Race Swivel Casters and matching rigid casters.



T-1114 Dollies — providing greatest maneuverability for bulky merchandise on Fairbanks "Lockweld" Steel Double Ball Race Swivel Casters. Very popular trucks with furniture movers, storage warehousemen and truckers.

YOURS ON REQUEST: Fairbanks Truck Catalog, complete with illustrations and specifications describing Fairbanks Trucks.

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VALVES • TRUCKS • CASTERS • WHEELS • DART & "PIC" UNIONS

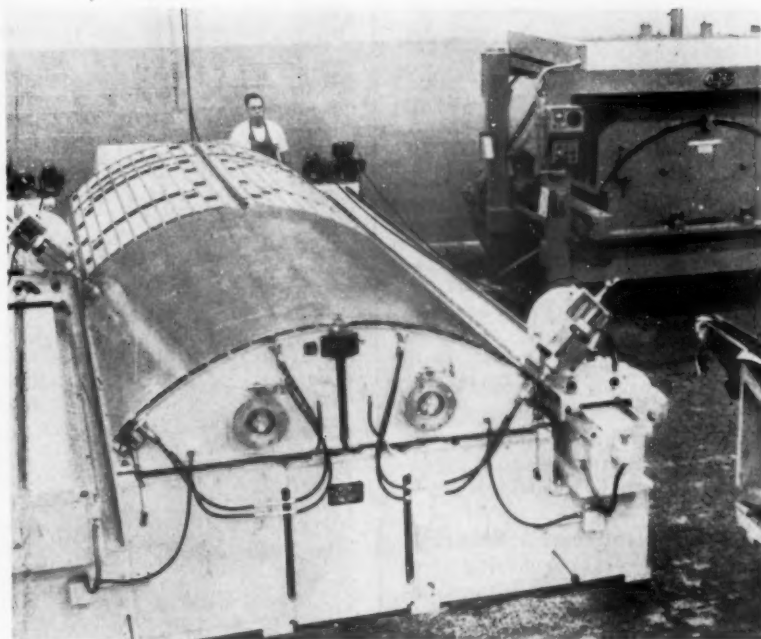


For More Information Write No. 249 on Inquiry Card—Page 32

Industry Developments

Building the Titan

Automatic milling machine prepare edges of curved aluminum plate for weld-fabrication. Section shown here is part of the fuel tank for the Titan, an inter-continental ballistics missile now under construction at the Martin Company, Denver, Colorado, for the U.S. Air Force. Air Reduction Company in conjunction with sub-contractors designed and engineered the fixtures, rotation devices, loading mechanisms and other parts of the welding machine tool such as welding heads, remote controls and welding power sources. Said to be the largest precision welding tool installation ever engineered in this country, it was handled by Airco's machine welding department, a group specializing in such work.



A new Pennsauken, New Jersey, plant to provide the eastern section of the country with fibre board drums for the transportation of liquid, semi-liquid and solid materials, has been announced by **National Steel Container Corporation, Chicago, Illinois**. The single story 40,000 square foot brick structure will be completed by July, 1958, and is expected to be in operation shortly after that.

The **West Disinfecting Company, Long Island City, New York**, has changed its name to **West Chemical Products Inc.** The name change was submitted by the firm's directors and approved by the stockholders, as announced in a recent meeting.

Scott Paper Company, Chester Pennsylvania, has announced that it will enter the chemical field with a new type of urethane foam for insulation, cushioning, filtration, and other industrial uses. The manufacturer of sanitary paper products decided on the new activity after the Company's chemical research laboratories developed a unique foam.

Link-Belt Company, Chicago, Illinois, has moved into its new Los Angeles plant at 1200 Sycamore Street in Montebello. About ten miles east of Los Angeles, the plant will more than double the company's former facilities.

The Garland Coal Co., of Knoxville, Tenn., expects to have in

operation soon the most complete wet-washing and air cleaning and drying plant in the United States. This facility, the **Coronet Jewell No. 2 plant** located near White-wood, Buchanan County, Va., will permit the separate cleaning and sizing of Coronet Jewell low volatile and Virginia by-product Splash Dam coals. The plant will be served by the Norfolk & Western Railway and will have six railroad tracks.

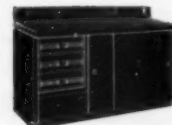
The Greenfield Tap and Die Corporation's New York office and warehouse which for nearly 40 years has been at 15 Warren Street has recently moved to 32 Worth Street, New York, where all operations will be on one floor in a modern office building.

BASIC MODEL



Model 608

Steel back panel, bottom shelf, backboard, cabinet type bench legs, a choice of top materials—steel, Presdwood, laminated wood, ShopTop or any special material you may need.



Space Engineering with Standard Units

Extreme versatility is a cost-cutting feature of all standard
HALLOWELL Shop Equipment



Typical installation of HALLOWELL cabinet benches.
Ideal for toolrooms, testing laboratories, instrument shops—in fact, wherever precision work is done.

There are big cost-cutting advantages in space-engineering plant areas with standard HALLOWELL Shop Equipment. For example, the extreme versatility of this equipment: the simplicity with which drawers and drawer tiers, sliding doors, electrical and testing panels, storage wall units, shelves and other standard interchangeable accessories can be added; the ease with which units can be rearranged to meet changing conditions. And advantages like these: HALLOWELL Shop Equipment is easy to keep clean, can be wiped free of industrial soil; will last indefinitely—a number of HALLOWELL steel benches are still in excellent condition after more than 30 years' use.

Consider, too, the ease of purchase and the speed of delivery. The standard line of work benches, shop desks, stools and chairs, tool stands, cabinets, storage walls, and shelving are stocked by leading shop equipment dealers.

Ask the authorized dealer nearest you for complete information. Or write Hallowell Shop Equipment Division, STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

SPS Jenkintown • Pennsylvania

Standard Pressed Steel Co. • The Cleveland Cap Screw Co. • Columbia Steel Equipment Co., Inc. • Nutt-Shel Corporation • SPS Western • Standco Canada Ltd. • Unbrako Socket Screw Co., Ltd.

For More Information Write No. 250 on Inquiry Card—Page 32



Keg Size JOB-PAK — the original Job-Pak container with 6 inner cartons, each containing 1/6 the contents of a keg.



3/4 JOB-PAK — contains 4 inner cartons each containing 1/6 the contents of a keg.



1/2 JOB-PAK — contains only 2 inner cartons, each containing 1/6 the contents of a keg.



Standard Inner Carton — containing 1/6 the quantity of a keg is the basic unit of the JOB-PAK system of packaging. It is also used as a distributor package.

***SPLITS — (1/2 Size Inner Carton)**

A few of the smaller sizes of M-C lock washers are now available in this package.

Write for tables showing how JOB-PAK divides standard bulk quantities into convenient shelf-stock packages, labeled and counted.

JOB-PAK

the modern bulk package for

LOCK WASHERS

SAVES MONEY 7 WAYS

- JOB-PAK eliminates counting and weighing
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- JOB-PAK reduces handling expenses—each inner carton weighs less than 33 lbs. . . . easy to lift or carry
- JOB-PAK speeds up physical inventory
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give you longer, trouble-free
service or refund your money
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American Crucible



PRODUCTS CO.

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For More Information Write No. 252 on Inquiry Card—Page 32

Industry

Haveg Industries, Wilmington, Delaware, has announced the acquisition of the Lithgow Chemical Company of California, manufacturers and applicators of a wide range of chemical corrosion resistant plastic coatings, cements, impregnations, and laminated linings. The company has specialized in a wide variety of thermosetting and thermoplastics coatings for use in building construction, chemical plants, food processing plants, laboratories, oil refineries, paper mills, sewage disposal plants, water treatment plants, textile mills, wineries, distilleries and many other industries. By this acquisition, Haveg Industries has broadened their line of coatings as well as providing substantial new production facilities on the Pacific Coast. The Lithgow organization will be operated as a division of Haveg. In addition to plants in Wilmington, Delaware; Norwalk, California; and West Warren, Massachusetts, Haveg is reported to be considering additional facilities for the manufacture and distribution of coatings and linings. In addition to selling the lining materials, the company offers a lining application service in most areas of the country utilizing the latest laboratory controlled techniques in vessel lining and metal coating.

Construction has begun on a \$2,000,000 expansion of facilities at the Napa, California plant of Kaiser Steel Fabricating Division, Kaiser Steel Corporation, Oakland, California. When completed in 1959, it will nearly double the plant's pipemaking capacity, making it one of the largest plants in the world for fabrication of line pipe for petroleum and gas transmission. Major facilities under construction include a 50,000 square foot addition to the pipe fabrication plant to house additional welding, facing, expanding and testing facilities, new buildings and more handling and storage areas.

PURCHASING

Monsanto Chemical Company, St. Louis, Missouri, has completed a major expansion in production for adipic acid at Luling, Louisiana. The new unit is integrated to raw materials facilities of the former Lion Oil Company, marking the first such integration of new production facilities to be completed since the 1955 merger of the company and Lion. Adipic acid is a chemical used in the manufacture of flexible and rigid foamed resin materials, vinyl plastics, synthetic lubricants and nylon.



The opening of the new steel service plant of **Joseph T. Ryerson & Son, Inc.**, warehousing subsidiary of Inland Steel Company, at Charlotte, N. C., has been announced. Construction of the plant, located at Mt. Holly and Chemway Roads, was begun early in 1957. It replaces the former leased quarters in Charlotte from which the company has been doing business in the area since 1953. Representing an investment of over one million dollars for building and equipment, the big new plant will serve the growing southeastern section of the country from well rounded stocks of bar, structural, plate, sheet and tubular steel.

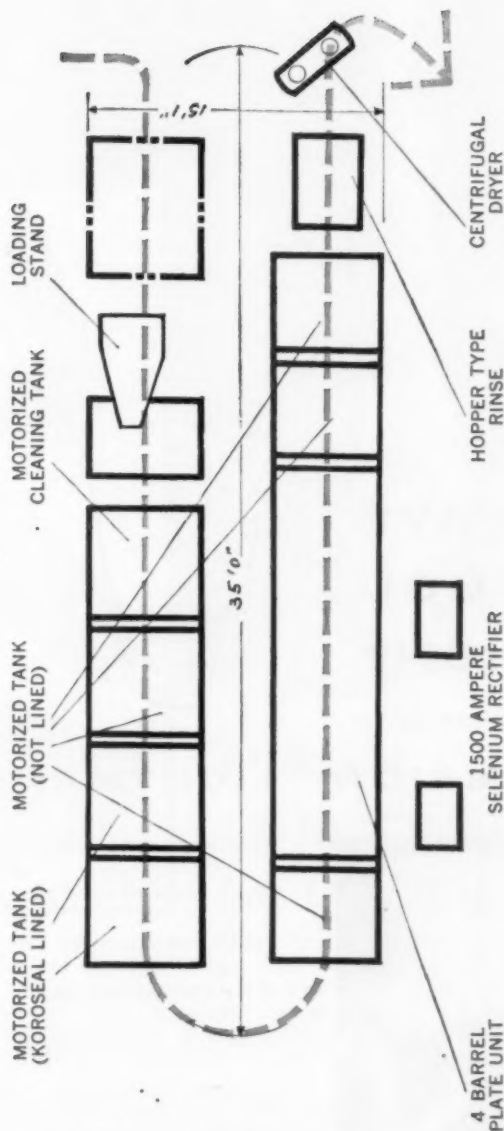
Hotpoint Co. Chicago, Illinois, has started construction of the first new appliance factory planned in the company's recently announced expansion program. Other plants and offices for the huge 770 acre tract northwest of Chicago are in the planning stages now and additions will be made to meet market needs. The first new factory, scheduled for completion in 1958, will start producing a new kind of refrigerator compressor by early 1959. Initially the plant will employ from 300 to 500 persons.

FEBRUARY 3, 1958

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Naturally, different plant limitations and end-products require an individually planned layout. For this reason, the UDYLITE Engineering staff and their knowledge are available to you for your particular shop needs. If a modern, money-saving plating plant is your goal . . . why not let UDYLITE help you plan it!



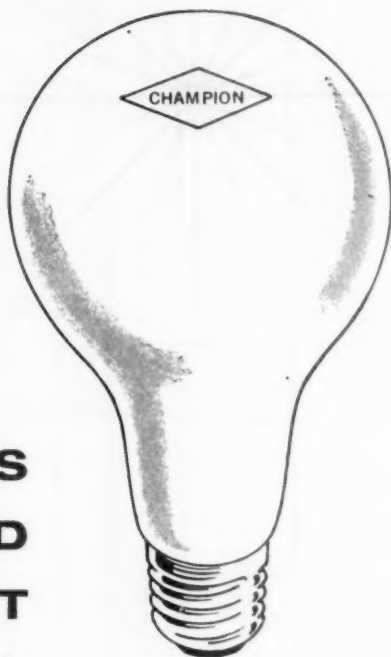
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Lightmanship to make sure you get all the light you pay for. Photometric testing, as shown at the left, helps in maintaining the light output of Champion Lamps at the highest possible level.

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Incandescent Fluorescent

Your best buy in lamps

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A division of Consolidated Electric Lamp Co.

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News

Stress Government's Role In Standardization

Increased participation by the government in major national and international standardizing activities was urged by a federal official as "one of the most effective means of increasing the use of standards by the government."

Dr. A. T. McPherson, associate director of the National Bureau of Standards, said at the recent Eighth National Conference on Standards that the government has an interest in savings resulting from the use of industry standards because it buys about as much as the ten largest corporations in the country. "When government personnel actively work with industrial groups on standardization problems, changes can often be made in the industry standards that will make them acceptable to the government," he noted.

Often the government needs standards before industry standards exist, Dr. McPherson pointed out. However, he added, there are many "instances in which federal specifications have been instruments of progress and have stimulated the introduction of new products and processes."

Need More Power For Automation

Industrial plants will have to increase the capacity of their electrical systems before they can install sufficient automation for the greater production necessary in the near future, according to A. C. Monteith, vice president in charge of apparatus products for Westinghouse Electric Corporation.

At the recent meeting of the National Electrical Manufacturers Association, Mr. Monteith cited a survey of 550 large plants which showed that most of them had inadequate electrical equipment to handle the anticipated 40 per cent rise in demand over the next ten years. "What good are all these dreams of electromotion and increased output," he said, "if the

very energy that is going to make all this possible can't even get in the front door."

Two General Electric Company engineers at the meeting, G. Fred Lincks and Earl V. DeBlieux, noted that Russia now ranks second to the United States in electrical power output even though her electrical industry started only 20 years ago. The GE officials, who recently attended meetings of the International Electric Technical Commission in Moscow, noted that Russian universities are producing many more technically trained young people than the colleges and universities in this country.

Grinding Wheel Pamphlet Now Available

A revised edition of the Grinding Wheel Simplified Practice Recommendation (R45-57) has been approved by the U. S. Department of Commerce.

The 76-page pamphlet lists standard shapes and sizes of grinding wheels classified according to end use, in addition to classification by standard shape type. Six new basic grinding wheel shapes have been added, along with a discussion of the development and benefits of a simplified practice recommendation.

Single copies of the recommendation are available at no charge from the Grinding Wheel Institute, 2130 Keith Building, Cleveland 15, Ohio.

Illinois Buying Guide Now Available

The 46th anniversary issue of the *Illinois Manufacturers Directory*, a guide to buying in that state, has been published by Manufacturers News, Inc. The 1800 page book presents a separate breakdown of the state's 20,000 manufacturing firms, including names of key executives, products produced, number of employees and approximate net worth. Companies are listed three ways; by product, by city and by name. The \$25 volume is available from the publisher at 20 East Huron St., Chicago, Ill.



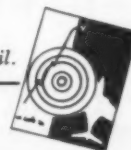
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Major manufacturers look to Lavelle for quality workmanship and dependable delivery at reasonable cost. If your design specifications demand the finest in fabricating services . . . contact Lavelle.

Write for illustrated brochure describing Lavelle's services in detail.



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Between Philadelphia, Pa., and Trenton, N.J.

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DIVISION OF CHANNING CORPORATION

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Now! Another
NEW "HATFUL OF SAFETY"
by FIBRE-METAL



SuperLite
ALUMINUM
SAFETY HAT

TOUGH...ribbed crown for highest impact resistance. • COOL...reflects, does not absorb heat. Well ventilated. • COMFORTABLE...men prefer and LIKE to wear SuperLite! • ONE SIZE FITS ALL HEAD SIZES. • NO LACING...exclusive design! Only headband ever needs replacing...a big saving! TOPS IN HYGIENE...easily sterilized. Waterproof. NON-TOXIC...mildew- and fungus-proof Polyethylene suspension. No deterioration. • FULLY TESTED...to exceed highest safety standards. • LIGHT-WEIGHT...trim and good looking.

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NO METAL PARTS
in Hat Suspension

For More Information Write No. 257 on Inquiry Card—Page 32

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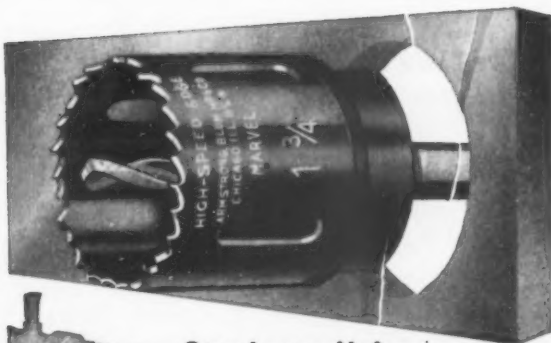
Purchasing man 15 years Industrial Purchasing and Supervision B.S. Degree, advanced training, familiar all phases purchasing, seeks position, Purchasing Agent, location optional. Write Box 1541, PURCHASING, 205 E. 42nd St., New York 17, N. Y.

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"There's No Substitute For Experience"
PEACOCK CORPORATION
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TO PURCHASING DEPARTMENT PERSONNEL

AT THE PRESENT you are reading a copy of Purchasing Magazine most likely addressed to the head of your department . . . or an assistant.

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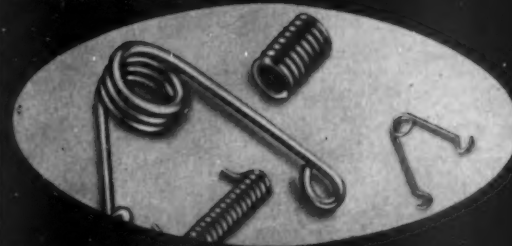
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TO HELP YOU get your own copy, we have inserted in this issue of PURCHASING, a special order blank. It is for YOUR use! Tear it out . . . fill in your name . . . and mail postage free, to PURCHASING MAGAZINE, 205 E. 42 Street, New York 17, N. Y.

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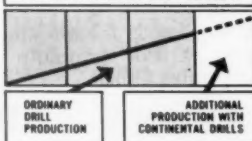
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142

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that has
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LISTS

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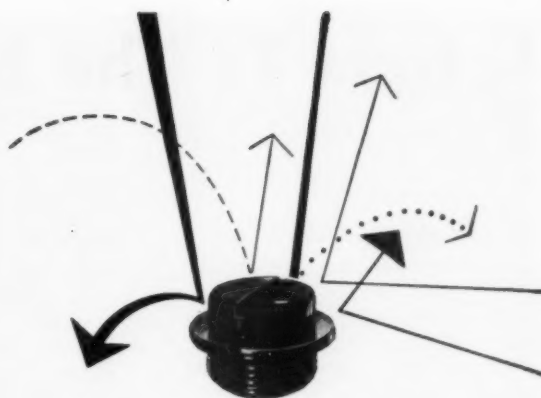
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FEBRUARY 3, 1958



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Here's the flexible vinyl cap and plug protector line that features the Non-SLIP GRIP—which makes their application and removal quick, easy and simple. No time-consuming gouging and prying them loose when they reach your customer's plant. They come out cleanly by hand . . . and won't shred or leave residue in your part.

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Letters To The Editor

SMALL BUSINESS NEGLECTED

Upon my return from Europe . . . I have had an opportunity to read the article "The Truth About Military Buying."

I very much appreciate your bringing this article to my attention. As a member of the Subcommittee on Government Procurement of the Senate Select Committee on Small Business I note however that the article neglects to deal with the special problems faced by small business through Federal Government negotiation and bid policies.

I would be very much interested in reading any future article which the magazine may run and which would discuss this very pertinent problem.

Jacob K. Javits
U.S. Senator, N.Y.

AGAINST RED CHINA TRADE

It may be a little late, but I'd like to change my mind on trade with Red China. A week or so after your Purchasing Opinion Poll was answered by me, I read where our State Department considered the United States to be technically at war with Red China. I, like millions of other people, never realized this condition existed. However, if my country feels this way about Red China, then I feel the same way until this condition has been resolved. Kindly record me as being opposed to trading with Red China at this time.

W.F. Martin, P. A.
Morse Twist Drill
& Machine Co.
New Bedford, Mass.

• Reader Martin refers to the Purchasing Opinion Poll "What Is Foreign Competition Doing to American Industry?" (p. 79, September, 1937). The question he mentions was, "In the interests of free trade and competition, do you favor relaxing trade restrictions with Red China?"

WEIGHTED PRICE INDEX

We are interested in establishing, as part of our purchasing operation, a weighted price index of raw material especially steel.

Before instituting this program, we thought it advisable to gather all available information from organizations who are currently engaged in this type of program. Therefore, we are interested in obtaining from you any articles or statistical forms which you feel would be of benefit.

E. W. Frey
Supervisory Buyer
Westinghouse Electric
Corporation
Beaver, Pennsylvania

• Appropriate articles forwarded.

BACK DOOR SELLING

Do you have any information on file in connection with the policies of companies concerning the contacting by salesmen and sales engineers of individuals, other than those in the purchasing department.

We are endeavouring to formulate a policy to recommend to the management of our company in connection with this matter. We imagine that many purchasing departments have the same problem as we encounter from time to time, and if a policy can be decided upon, we think it will be helpful all around.

H. H. Stewart
General Purchasing Agent
Canada Wire and Cable Company
Toronto, Canada

• We know of no company that prohibits salesmen from contacting individuals outside the purchasing department. However, most companies have either formal or informal policies requiring salesmen to make their initial contact through the purchasing department. In some cases, of course, salesmen will try to contact engineers and others

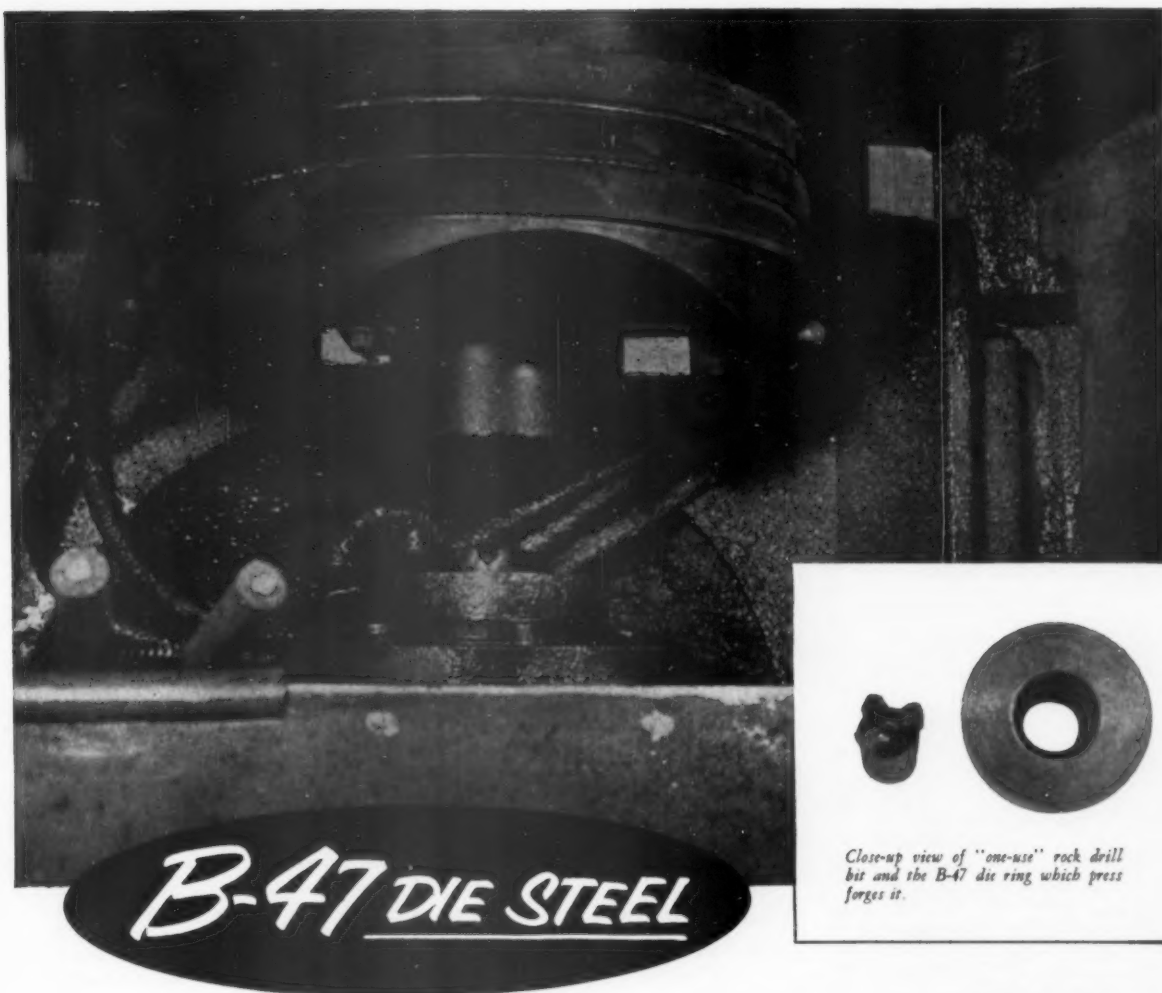
without going through purchasing. One good way to prevent this from happening is to get the cooperation of all departments involved and have them refuse to see a salesman unless he has been through purchasing first. This procedure is not at all uncommon.

INVOICE TERMS

Is there a standard practice or perhaps any law governing the date on which invoices are rendered with respect to the date on which the materials are shipped? Also, we know at least a few companies which specify on their purchase orders that they will figure "payment terms from date of invoice or date of receipt of merchandise, whichever is later" This is probably not the most common way of expressing this particular purchase order condition, but we would be very interested to know whether American industry has accepted it, and if so, to what extent.

I. Jacobson
Purchasing Agent
Nuclear Development Corp.
of America
White Plains, New York

• It is difficult to give any hard and fast rules regarding the terms of payment since they vary so widely, even within industries. In looking over some purchase orders in our files, we do not see anything which corresponds to the terms you quoted. However, there is enough variety to warrant your setting your own standards of acceptance. It is also our understanding that most selling companies do not mail the invoice until the day of shipment from their plant. It is, of course, entirely acceptable to incorporate this stipulation as part of the "terms and conditions" which usually appear on the back of purchase orders.



Close-up view of "one-use" rock drill bit and the B-47 die ring which press forges it.

INCREASED ROCK DRILL BIT PRODUCTION 330%



Write for
BLUE SHEET on B-47

This concise four-page folder gives all needed handling and shop treatment details on B-47. Included is certified laboratory information on physical characteristics, and complete data on forging, annealing, hardening, tempering, etc. Ask for your copy.

ADDRESS DEPT. P-2

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"The less breakdowns we have, the less die changes we must make and the better production we get. Also, we are able to plan our production on the basis of being sure of the reliability of our dies."

Continued high production is necessary to make these special "one-use" bits com-

petitive in today's market. B-47 practically eliminates unscheduled downtime caused by die failure.

A-L's B-47 is a tough hot work steel. It has excellent resistance to shock and abrasion at elevated temperatures. Also, it is especially good for those applications which require ruggedness at relatively high hardnesses.

Check your A-L representative today about Allegheny Ludlum's complete line of tool and die steels—a grade for every job. *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh, Pa.*

For nearest representative, consult Yellow Section of your telephone book.

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Advertisers In This Issue

A	
Acme Chain Corp.	132
Aero Mayflower Transit Co.	130
Alan Wood Steel Co.	55
Allegheny Ludlum Steel Corp.	145
Aluminum Company of America	37
American Brass Co., The	93
American Crucible Products Co.	136
American Felt Company	123
American Hard Rubber Co.	103
American Hoist & Derrick Co.	143
American Saw & Mfg. Co.	124
American Screw Co.	22
American Steel & Wire Co.	58, 59
American Telephone & Telegraph Co.	14
Anaconda Copper Mining Co. & Subsid. Cos.	93
Armstrong-Blum Manufacturing Co.	141
Atlas Screw & Specialty Co., Inc.	131
Aurora Pump Div. The New York Air Brake Co.	122

B	
Baldor Electric Co.	29
Bassick Co., The	148
Bound Brook Oil-Less Bearing Company	121
Brainard Steel Div., Sharon Steel Corp.	64
Bridgeport Brass Co.	10
Brown Co.	91
Brown Paper Co., L. L.	114
Buffalo Bolt Co., Div. of Buffalo-Eclipse Corp.	48

C	
Central Paper Company	30
Century Electric Company	1
Champion Lamp Works	138
Chase Brass & Copper Co., Inc.	107
Chatillon, John, & Sons	120
Chicago Molded Products Corporation	106, 120, 131
Chicago Rawhide Mfg. Co.	52
Chrysler Corp., Amplex Div.	24
Classified Advertising Section	140
Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div.	141
Columbia-Geneva Steel Div.	58, 59
Continental Diamond Fibre, Div. of the Budd Co., Inc.	100, 101
Continental Drill Corp.	142
Continental Felt Co.	131
Cooper Alloy Corporation	32
Copperweld Steel Co., Ohio Seamless Tube Division	12, 23
Cotton Fiber Paper Manufacturers	113
Crane Company	8
Crossett Paper Mills	147

D	
De Van-Johnson Co.	120
DoAll Co., The	49
Dolge Co., C. B.	143
DuPont de Nemours & Co., Inc., E. I.	60

E	
Eastern Tool & Mfg. Co.	122
Elastic Stop Nut Corp. of America	43
Elbe File & Binder Co.	114
Esterbrook Pen Co., The	115

F	
Fairbanks Company	133
Fibre-Metal Products Company	140
Fischer Special Mfg. Co.	106
Foster Co., L. B.	18
Frass & Co., Inc., Peter A.	50
Fuller Company	34

G	
Gaylord Container Corporation Division of Crown Zellerbach Corporation	66
Goodyear Tire & Rubber Co., Inc.	6
Graybar Electric Co., Inc.	4
Greenfield Tap & Die Corp.	99

H	
Hardinge Brothers, Inc.	44
Hinde & Dauch	98
Hyatt Bearings Div. General Motors Corp.	61

I	
I-T-E Circuit Breaker Co. Small Air Division	118, 119
Industrial Retaining Ring Co.	27

J	
Jenkins Bros.	4th Cover

K	
Keystone Steel & Wire Co.	33

L	
Lamson & Sessions Co., The	3
Lavelle Aircraft Corp.	139

M	
Marsh Corp. Jas. P.	142
Master Electric Co.	20
Mellows Co., The	136
Micro Switch, A Div. of Minneapolis-Honeywell Regulator Co.	41
Moline Malleable Iron Co.	28
Monarch Aluminum Mfg. Co.	65
Moore Business Forms	111
Mt. Vernon Casting Corp.	42

N	
National Acme Co., The	35
National Tube Co.	58, 59
Newark Wire Cloth Co.	63
Nice Ball Bearing Co.	140

O	
Ohio Seamless Tube Div. of Copperweld Steel Co.	12, 23

P	
Parker-Kalon Div. General Amer. Trans. Corp.	129
Plymouth Rubber Co., Inc.	106
Polyken Products Div. of Kendall Co.	16

R	
Republic Steel Corp.	104, 105
Rollway Bearing Company	26
Ryerson & Son, Inc., Joseph T.	68

S	
Saginaw Steering Gear Div., General Motors Co.	51
Sharon Steel Corp.	117
Shell Oil Company	2nd Cover
Simonds Saw & Steel Co.	40
Smith Corp., A. O., Electric Motor Div.	38, 39
Southern Screw Co.	62
Square D Company	3rd Cover
Standard Pressed Steel Company	97
Stonehouse Signs, Inc.	126
Strathmore Paper Co.	112

T	
Tennessee Coal & Iron Div.	58, 59
Tension Envelope Corp.	114
Thomson Co., Judson L.	36
Tinnerman Products, Inc.	57
Torrington Company, The	95

U	
Udylite Corp.	137
United States Steel Corporation (Steel Plus)	58, 59
United States Steel Export Co.	58, 59
United States Steel Supply Co.	58, 59

V	
Veeder-Root, Inc.	2

W	
Wagner Electric Corp.	56
Waterbury Rolling Mills, Inc.	125
Western Felt Works	102
White Dental Mfg. Co., S. S. Industrial Div.	143
Wickwire Spencer Steel Div. of The Colorado Fuel & Iron Corp.	141
Wilson Rubber Co., The	142
Wrought Washer Mfg. Co.	127

Y	
Yale & Towne Mfg. Co.	108, 109
Youngstown Sheet & Tube Co.	47
Youngstown Welding & Engineering Co., The	31

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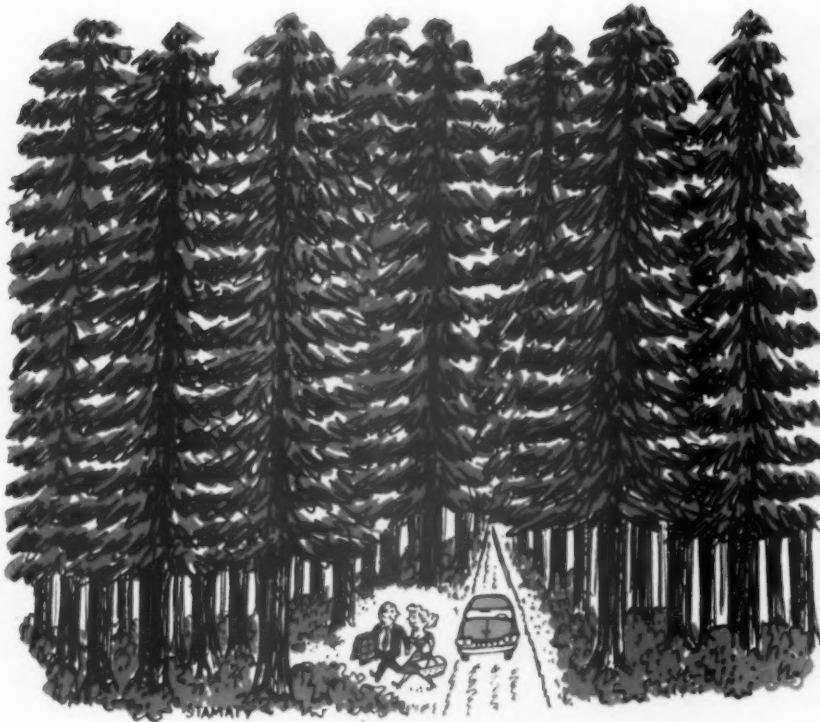
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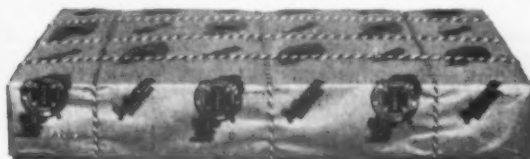
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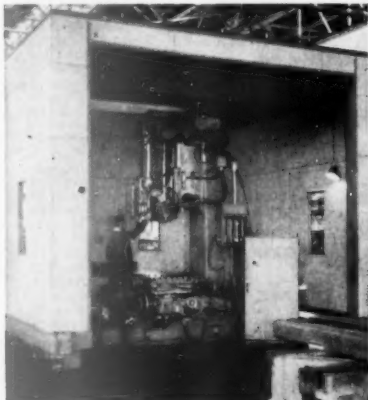
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ST. LOUIS, MO.	American Commission Co.
	Atlas Paper Co.
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WASHINGTON, D. C.	R. P. Andrews Paper Co.
WICHITA, KANSAS.	Southwest Paper Co.
WICHITA FALLS, TEX.	Empire Paper Co.

materials-handling news

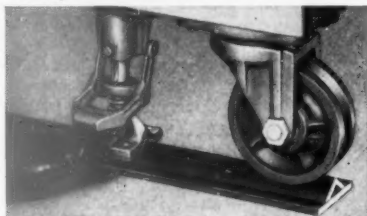


NEW AND UNUSUAL APPLICATIONS OF BASSICK CASTERS THAT MIGHT BE ADAPTED TO YOUR HANDLING PROBLEMS



Rolling room steadies temperature!

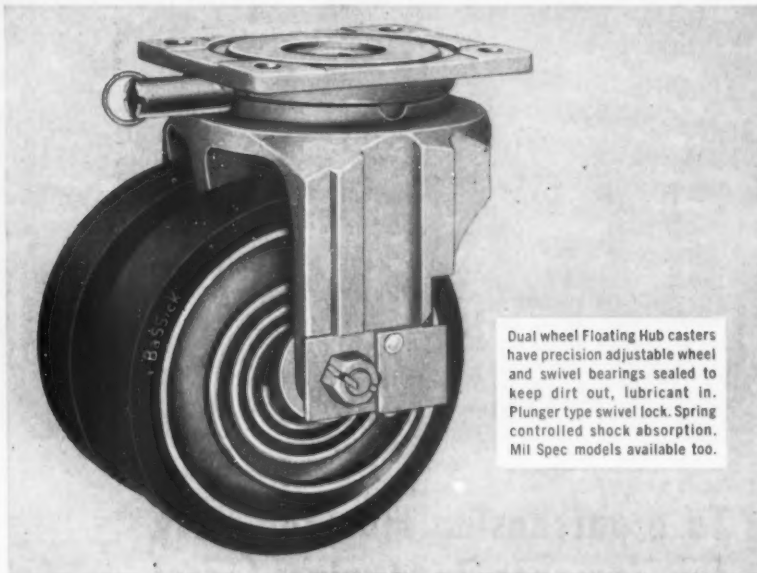
Pratt & Whitney Co., Inc. has built constant temperature rooms on Bassick heavy duty "Floating Hub" casters for use in final finishing and testing of machinery. These mobile rooms seal off the machine being worked on against temperature changes which could cause errors in the extremely fine tolerances.



Bassick Grooved wheel casters have wheels that fit them for use on inverted angle iron tracks. They increase efficiency, and give better control of handling. Installations are economical on production, shipping, receiving, assembly lines and the like.



Big as 1500 home vacuums, the JARC® (Jet Aircraft Runway Cleaner) sucks up sand, rocks or hardware which could damage jet engines. Makers, United States Hoffman Machinery Corp., use rubber-tired, spring-loaded "Floating Hubs" to carry nozzles.



Dual wheel Floating Hub casters have precision adjustable wheel and swivel bearings sealed to keep dirt out, lubricant in. Plunger type swivel lock. Spring controlled shock absorption. Mil Spec models available too.

McDonnell Aircraft uses casters to aid production two ways:

First—Materials-handling

Bassick dual wheel Floating Hub casters on the McDonnell Aircraft Corporation J-57 jet engine build-up stands carry 6,100 pounds. As stands are pulled by tractors, the shock-absorbing casters snub out vibration dangerous to delicate engines.

When assembled the engines are transferred to run-in stands, (15,000 pound pay loads) towed to testing areas on Bassick casters, test run, and returned to assembly area for installation or storage. Smaller aircraft parts such as landing gear, radar assemblies, end wings, and stabilizers are also moved on Bassick caster-equipped stands.

Second—Man-handling

Bassick caster-equipped work stands are used to assemble the F-101 "Voodoo" for the U.S. Air Force at McDonnell Aircraft. They practically surround the plane, put the men in the most convenient work locations. Bassick position locks hold stands steady. Could you adapt this man-handling idea to production or maintenance jobs in your plant?



YOUR DISTRIBUTOR CAN HELP YOU — CALL HIM

Your local Bassick Distributor can keep you up to date on the latest wrinkles in time-saving materials-handling techniques. And he can often recommend the best, most efficient Bassick caster for a specific job. Let his knowledge and experience help you.



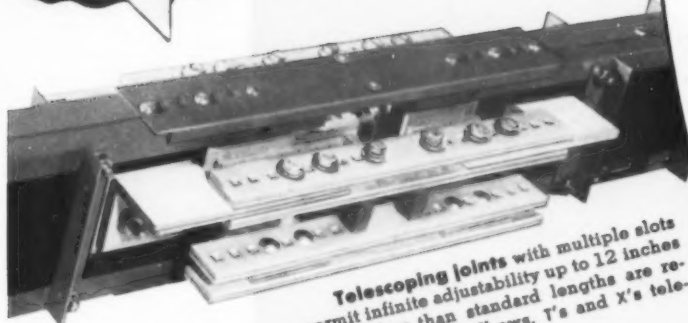
MAKING MORE KINDS OF CASTERS... MAKING CASTERS DO MORE

THE BASSICK COMPANY, Bridgeport 5, Conn. In Canada: Belleville, Ont.

6.1



Here's Why Square D's New Adjustable ALUMINUM FEED-IN DUCT makes a lot of sense to me!



Telescoping joints with multiple slots permit infinite adjustability up to 12 inches when other than standard lengths are required. Standard elbows, T's and X's telescope up to 6 inches!

Needed-Rush!
85 feet, 3 1/2 inches
1000 Amp, 3 φ 4 wire
Feed-in Duct

Fast delivery because any length requirement can be met with standard 3, 5, 7, or 10 foot lengths, plus telescoping joints



Completely adjustable

after it's hung. For example, if two ends terminate 6 1/2 inches apart, connection can still be made with a telescoping joint



Faster to install - Above photo of fixed joint shows simplicity of design - symmetrical ends - less bars per phase - fewer connections - outward-facing captive bolts



Totally enclosed for safety

—at no price premium.
No de-rating necessary.
Square D's design eliminates need for ventilation

MORE DESIGN FEATURES

Thinnest cross-section available!
Tight spots, pipes and structural members present less problems

Easy transposition of phases, using standard telescoping joint parts, for maintaining balanced voltage on long runs

Certified short circuit tests by an independent testing laboratory have proved the superiority of Square D's continuously-supported bus design

Write for the complete story

Address Square D Company, 6060 Rivard Street,
Department SA, Detroit 11, Michigan

NOW...EC&M PRODUCTS ARE A PART OF THE SQUARE D LINE



SQUARE D COMPANY



*“—and
as evidence of our
good intent...”*

It was considered a bold stroke, in Nathaniel Jenkins' day, to fix one's mark or name to the product of his invention. In 1864, product quality control was largely a matter of good intent and determination on the part of the maker. Nathaniel Jenkins *had* that determination and, as evidence of it, put his Diamond mark and signature on every Jenkins Valve. Over the years, many new and different types of valves have joined the Jenkins Valve family. And because the rigid, quality specifications set by the founder have never been compromised, the Jenkins Diamond trade-mark has steadily gained in value.

Indeed, to buyers and specifiers of valves everywhere, this mark has become a trusted symbol of efficient, economical valve performance. Jenkins Bros., 100 Park Avenue, New York 17.